

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problems Mailbox.**



US005832171A

# United States Patent [19]

Heist

[11] Patent Number: 5,832,171  
[45] Date of Patent: Nov. 3, 1998

[54] **SYSTEM FOR CREATING VIDEO OF AN EVENT WITH A SYNCHRONIZED TRANSCRIPT**

[75] Inventor: H. Daniel Heist, Bryn Mawr, Pa.

[73] Assignee: Juritech, Inc., New York, N.Y.

[21] Appl. No.: 658,405

[22] Filed: Jun. 5, 1996

[51] Int. Cl.<sup>6</sup> ..... H04N 5/91; H04N 5/93; H04N 7/00

[52] U.S. Cl. .... 386/46; 386/52; 386/54

[58] Field of Search ..... 386/46, 52, 54, 386/61, 65, 95, 96, 103, 104, 105, 4, 1; 364/419.01; H04N 5/91, 5/93, 7/00

[56] **References Cited**

**U.S. PATENT DOCUMENTS**

4,924,387 5/1990 Jeppesen .  
5,172,281 12/1992 Ardis et al. .  
5,392,428 2/1995 Robins ..... 364/419.01

**OTHER PUBLICATIONS**

Legal Process™ product brochure, Legal Process, New Orleans, Louisiana, date unknown, 4 pages.  
Re:Viewer™ Workstation product brochure, Visionary Information Systems Inc., Santa Ana, CA, 1995, 2 pages.

DataCoder™ Superstation product brochure, Visionary Information Systems Inc., Santa Ana, CA, 1995, 2 pages.  
DiscoveryVideo™ product brochure, Discovery Products, Inc., San Ramon, CA, 1993, 2 pages.

DiscoveryVideo™—Post Production product brochure, Discovery Products, Inc., Mt. Prospect, Illinois, 1993, 2 pages.  
DiscoveryVideo™—Reporter product brochure, Discovery Products, Inc., Mt. Prospect, Illinois, P/N 100-0031-00, 1994, 2 pages.

Quickstart to Discovery™ for Windows™ demonstration brochure, Discovery Products, Inc., P/N 100-0109-00, 1994, 6 pages.

ShowCase™ Multimedia Presentation System, Graphic Evidence, A Division of LSI Litigation Sciences, Culver City, CA, date unknown, 1 page.

Primary Examiner—Robert Chevalier

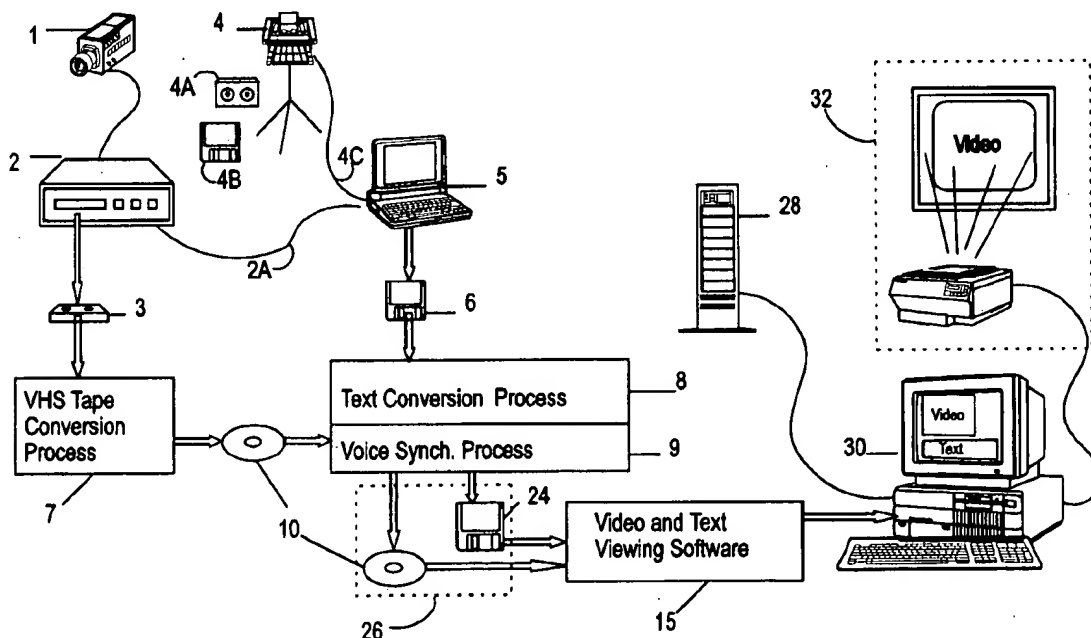
Attorney, Agent, or Firm—Panitch Schwarze Jacobs & Nadel, P.C.

[57]

**ABSTRACT**

Methods and apparatus are provided to create a video product with synchronized video and text of an event. The video product allows a user to play back a video of the event, while simultaneously viewing the corresponding transcript. If an original transcript was made of the event, the video product allows the user to play back the video while also viewing the page and line numbers of the original transcript.

66 Claims, 15 Drawing Sheets



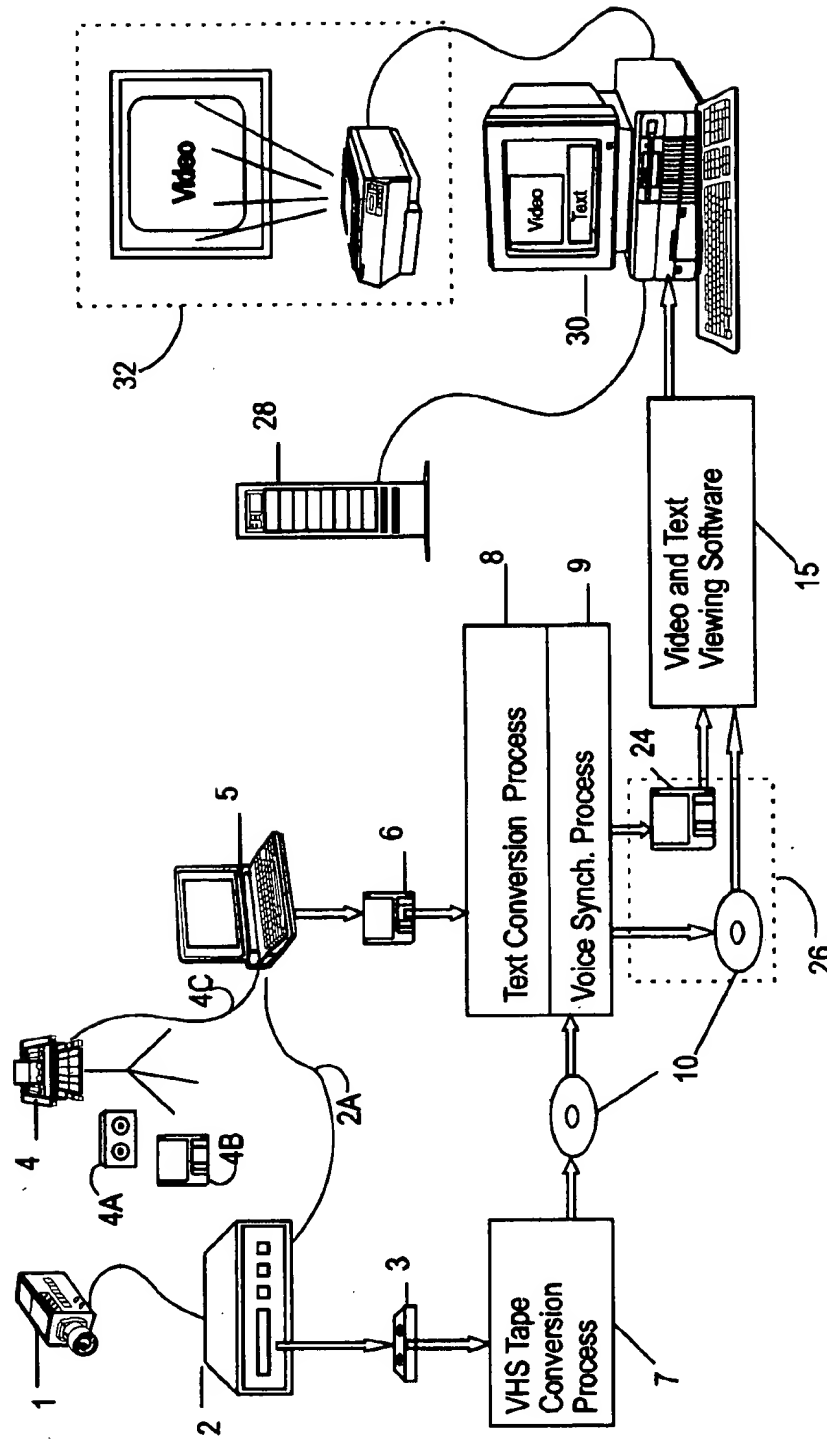


FIG. 1

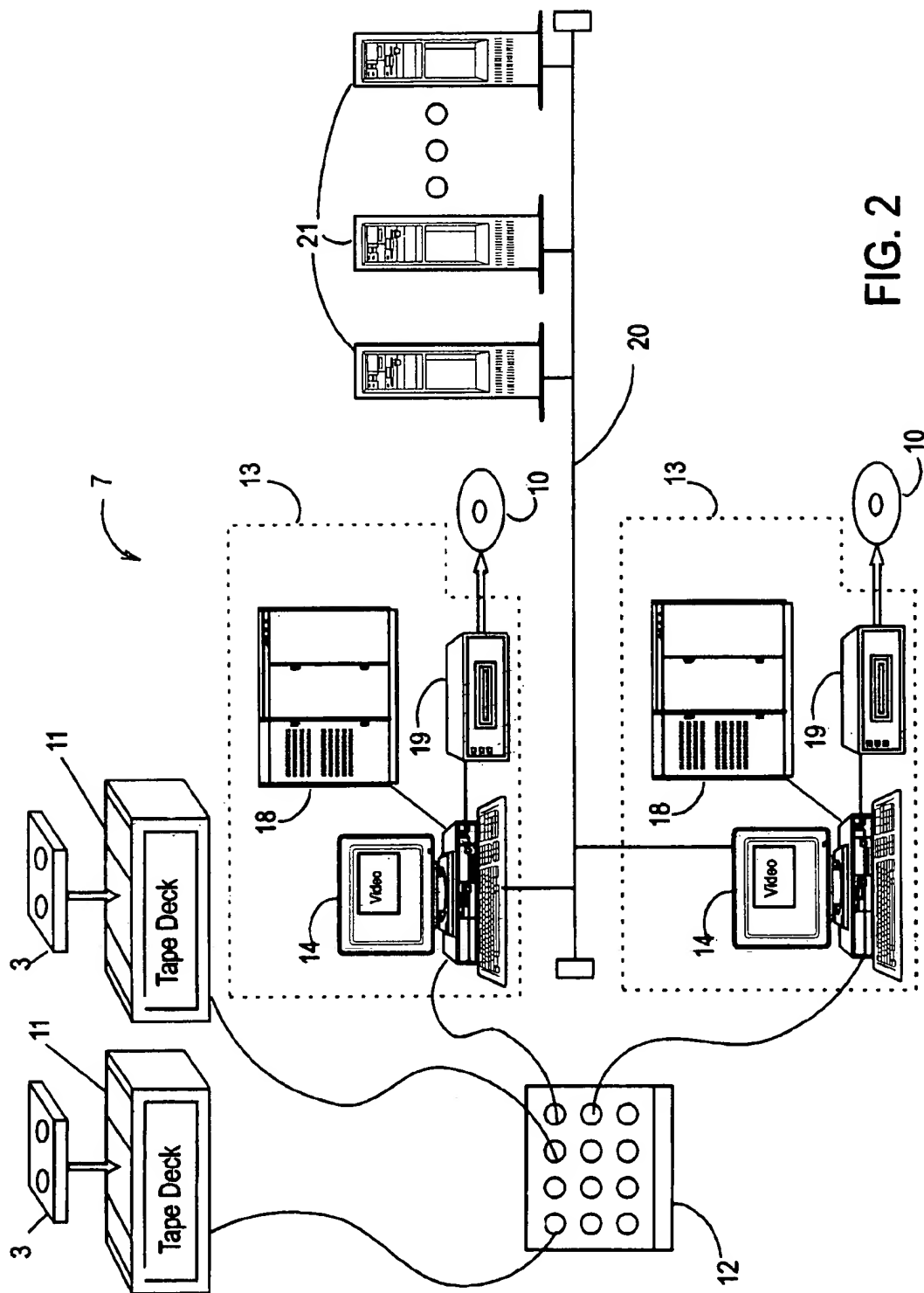


FIG. 2



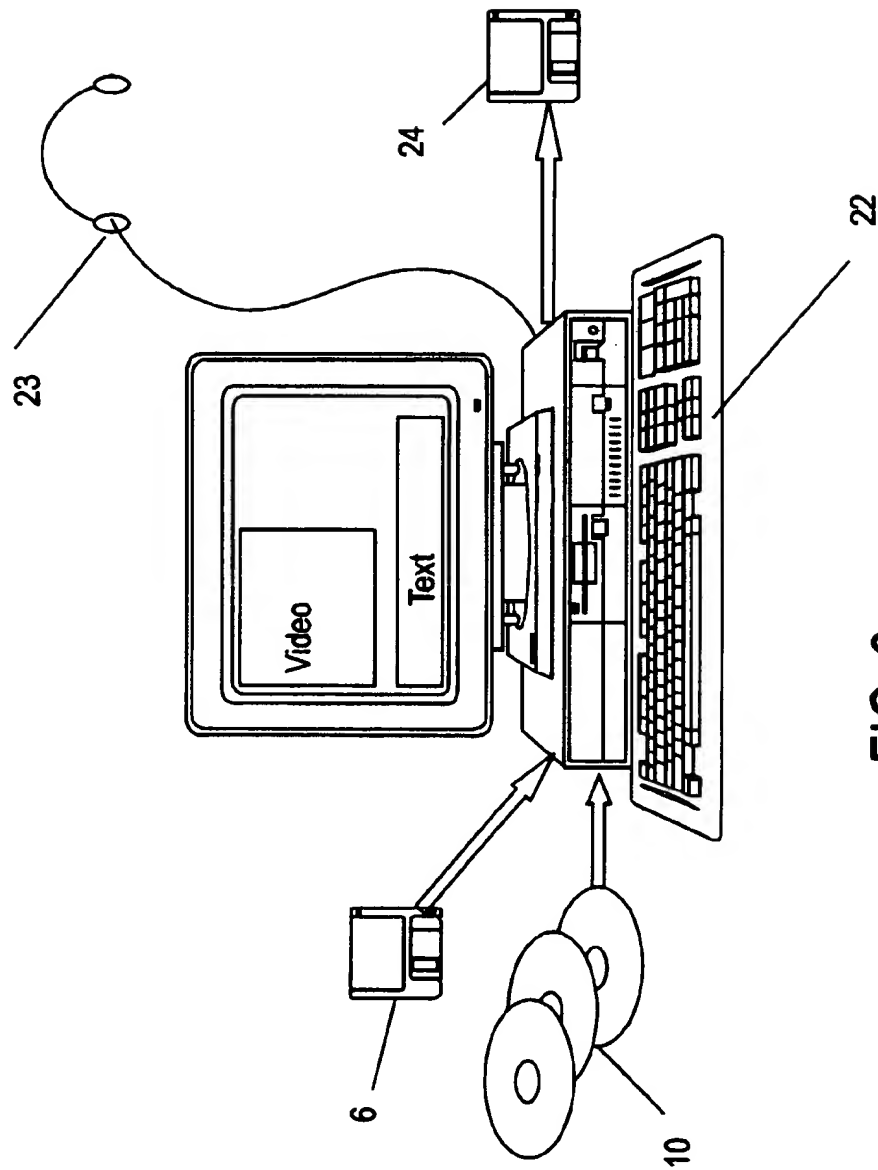


FIG. 3

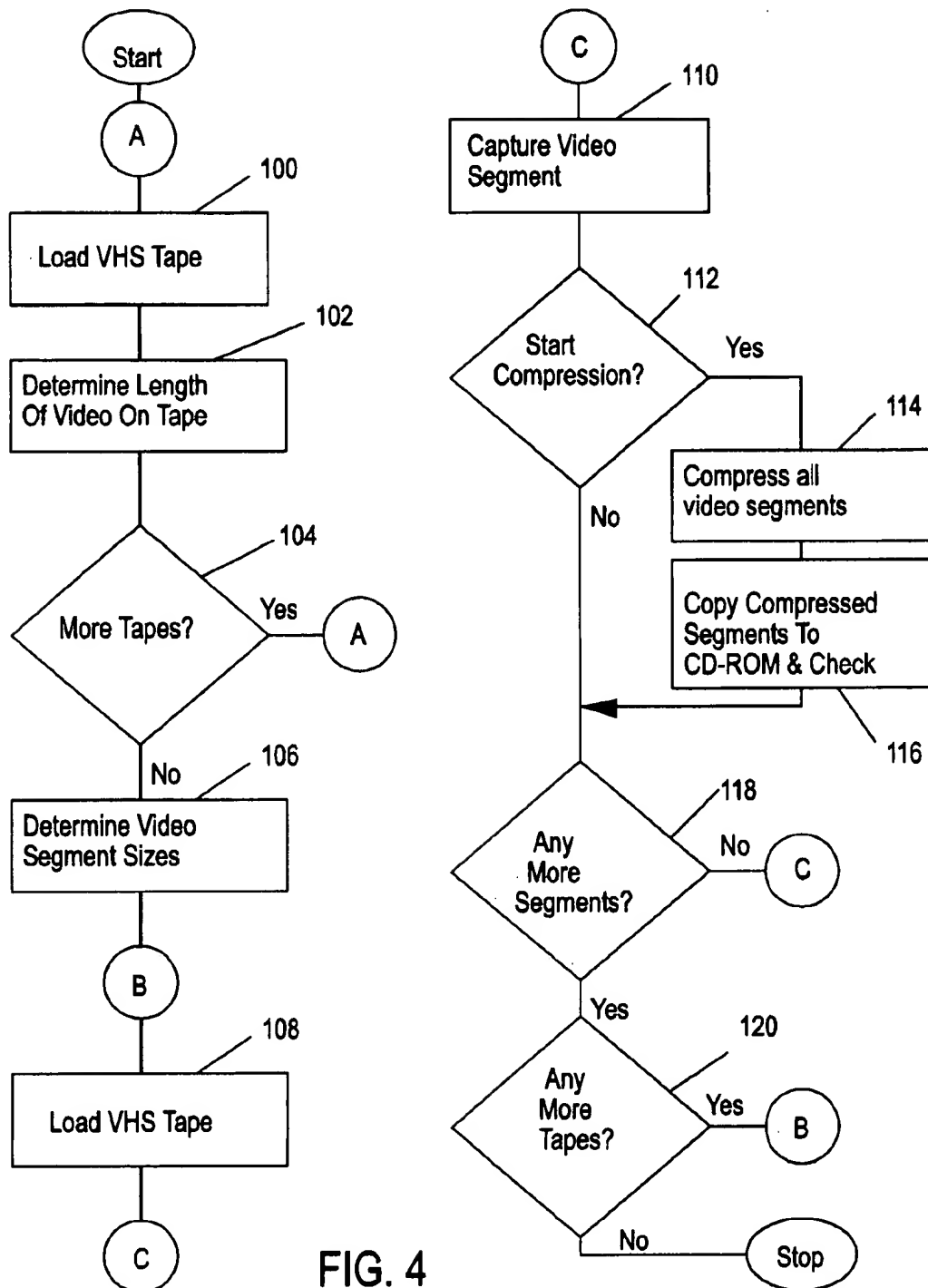


FIG. 4

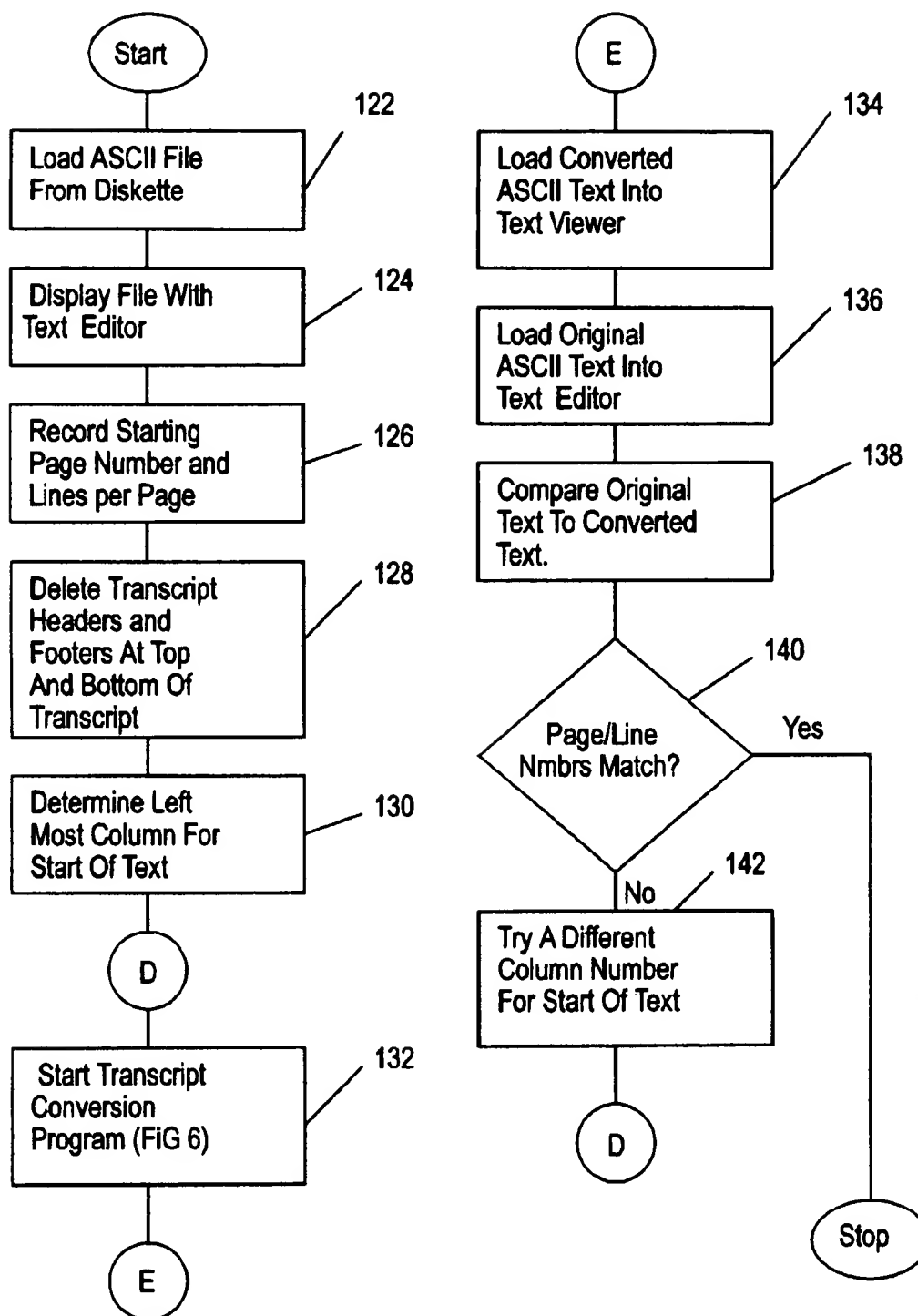


FIG. 5

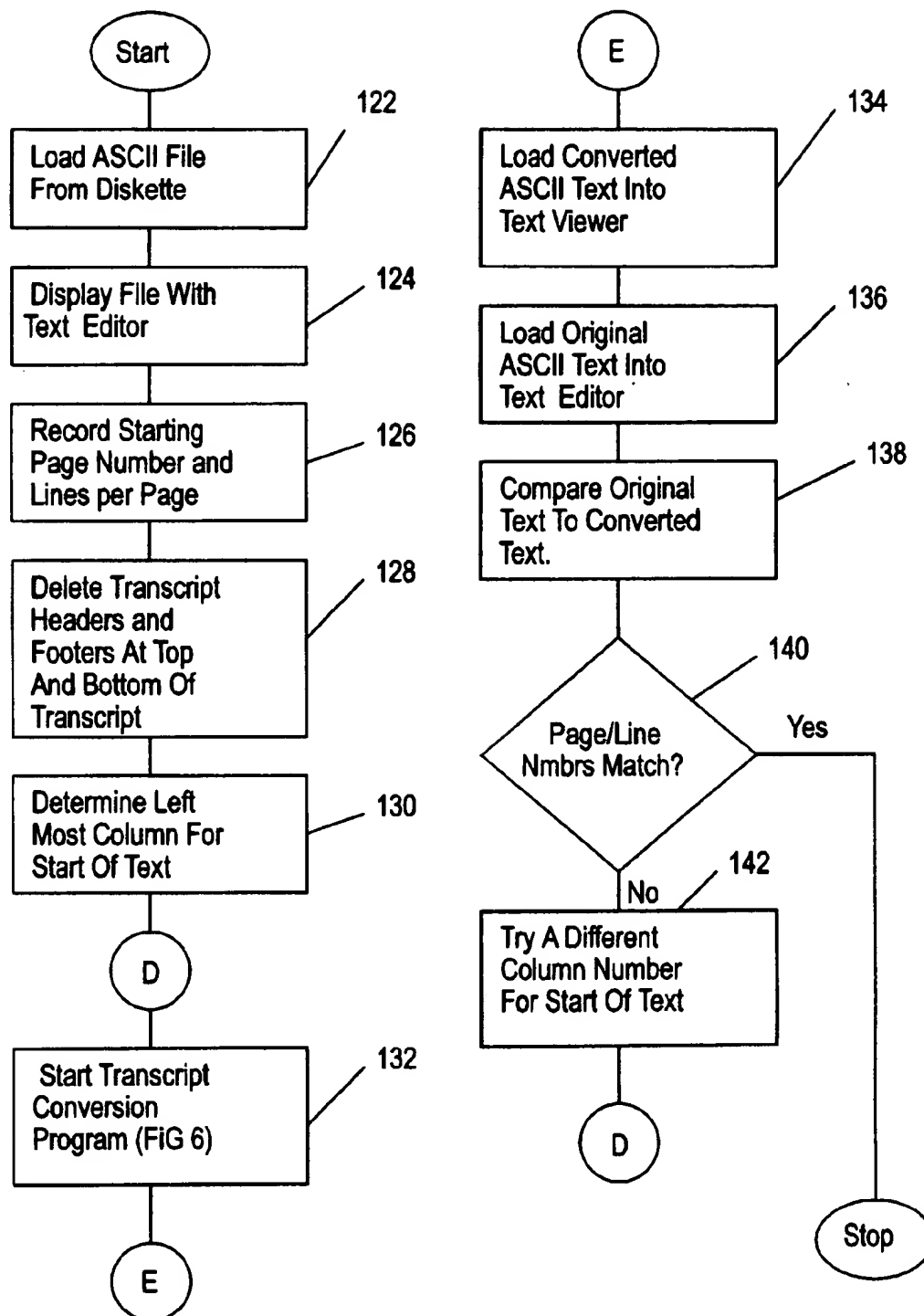
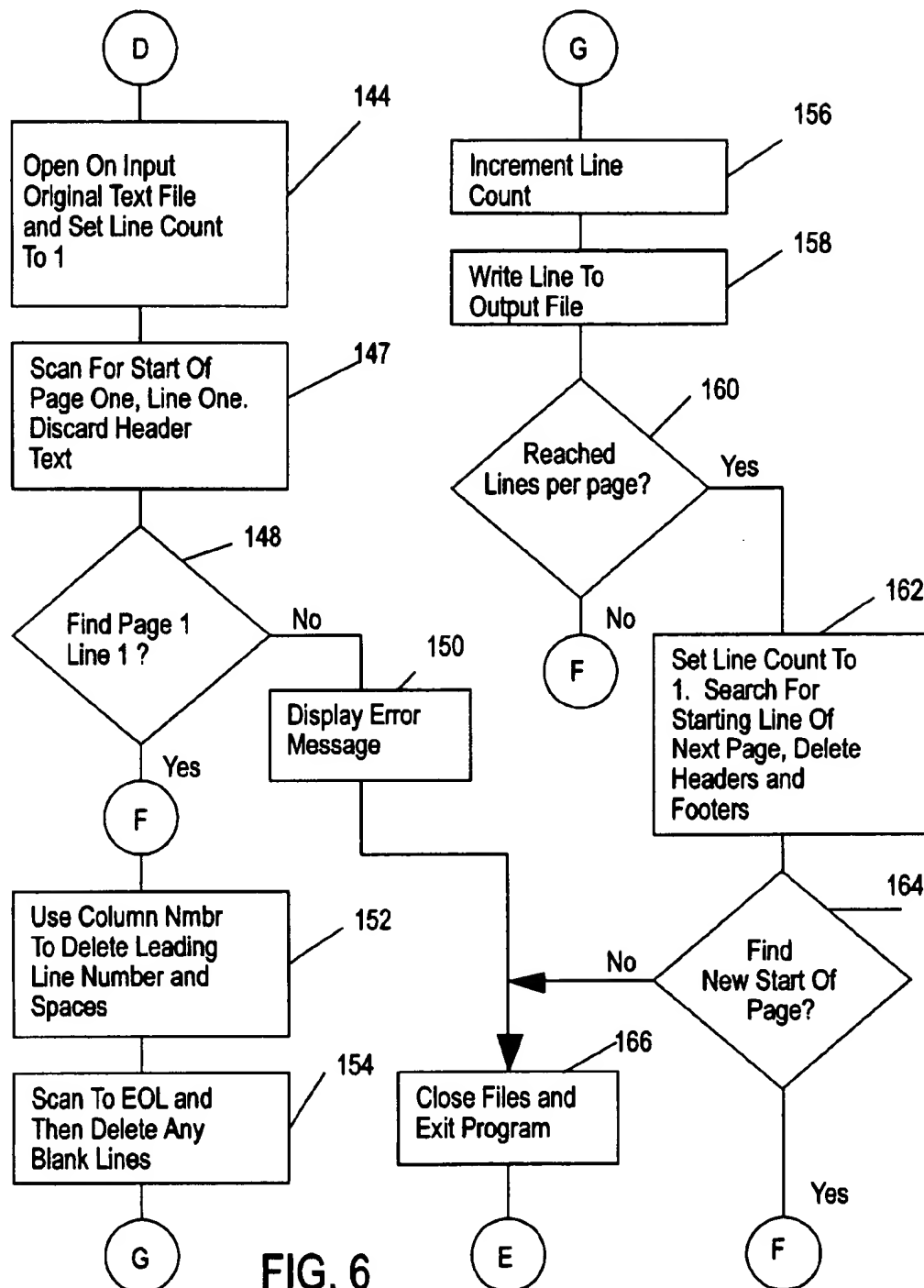


FIG. 5



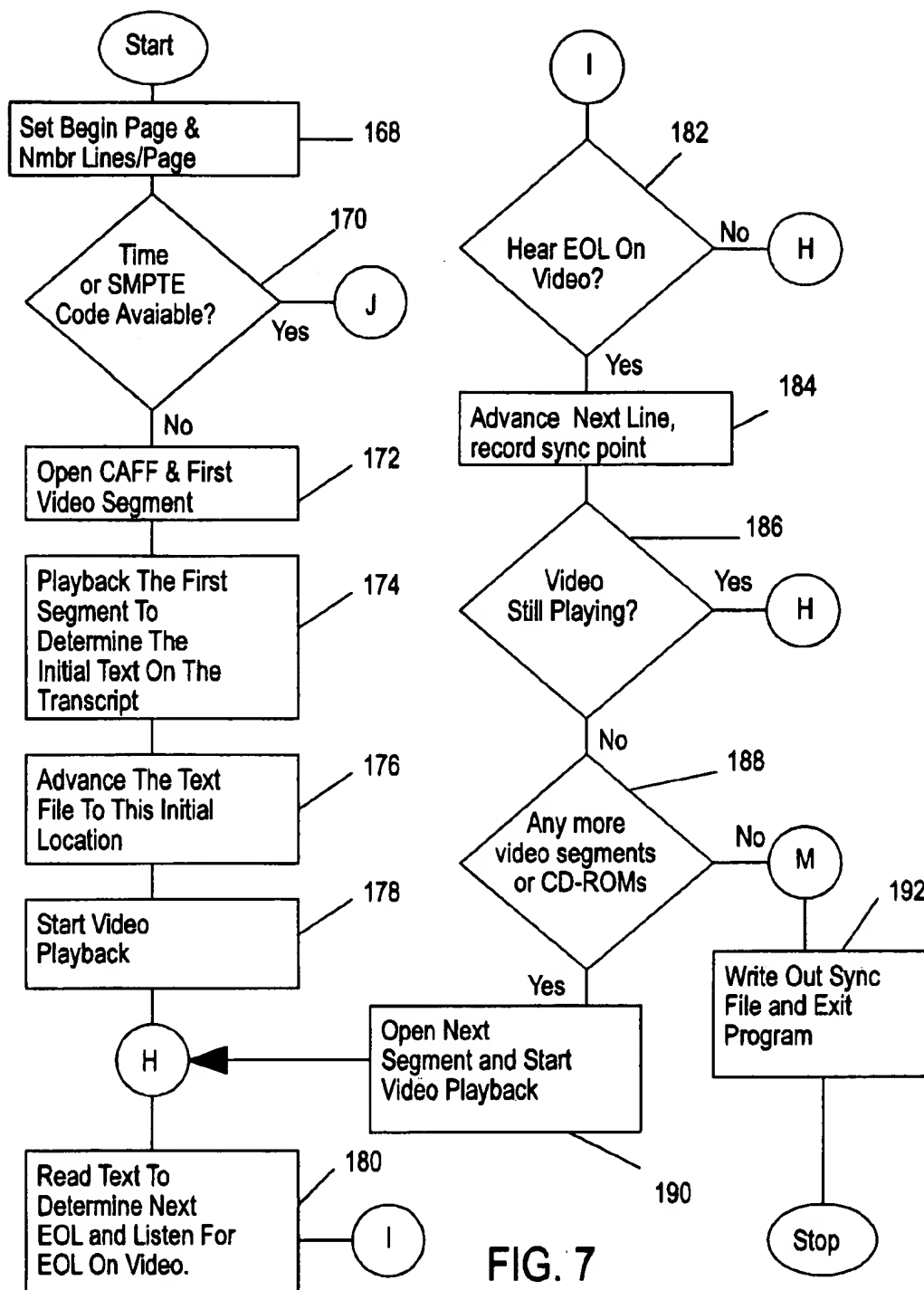


FIG. 7

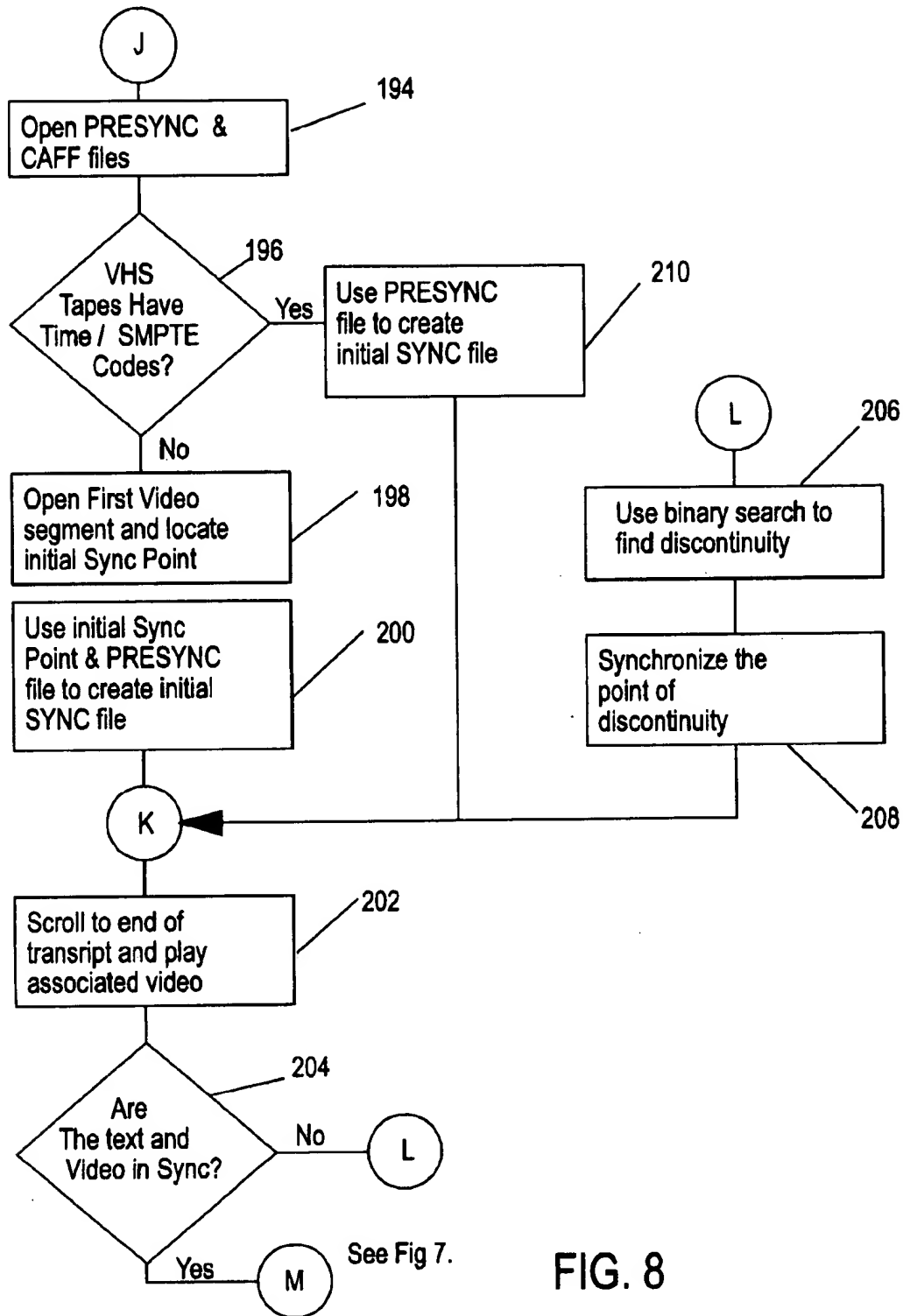


FIG. 8





[illegible]

FIG. 10

## Audio and Video-Settings Sheet

[illegible]

FIG. 11

[illegible]

FIG. 12

## LIPSYNC Processing Sheet

[illegible]

FIG. 13

## LIPSYNC Processing Sheet

[illegible]

FIG. 13

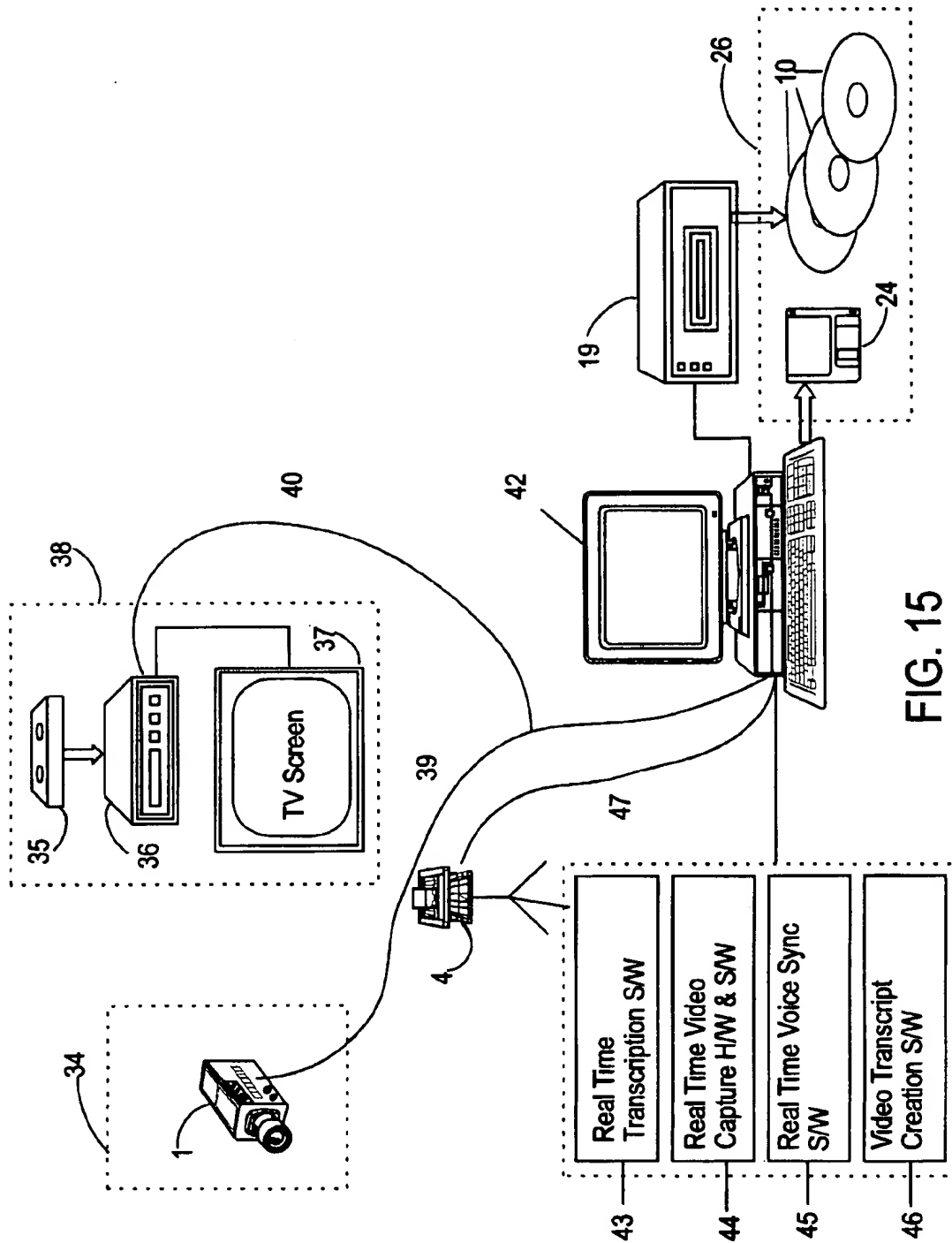
## Quality Control Check Off Sheet

Project Name		Deposition Name	
Date Of QC		Deposition Nmb	
.TXT file imported into LiveNote			
.SYN file imported into VideNote			
Last line of transcript compared to last line of orig ASCII			
Performed random compare of lines to orig ASCII			
Played video randomly throughout deposition			

## Transition Checks

CD ROM Nmb	File Name	File Length (hh:mm:ss.dd)	Cumulative Length (hh:mm:ss.dd)	Played through this transition and everything appear OK. Enter a Check.

FIG. 14



# SYSTEM FOR CREATING VIDEO OF AN EVENT WITH A SYNCHRONIZED TRANSCRIPT

## FIELD OF THE INVENTION

The present invention relates to a process and apparatus for creating a randomly accessible video product which includes video of an event and the associated transcript, the transcript being linked to and synchronized with the video for simultaneous viewing.

## BACKGROUND OF THE INVENTION

Testimony is a proceeding in which an attorney asks oral questions of a witness. A word-for-word record of the questions asked and the answers given is called the testimony transcript. Testimony is normally taken during a deposition or a trial. Testimony is recorded by a court reporter using a special typewriter-like device normally referred to as a stenograph machine. The output of the stenograph machine is a long paper tape of printed phonetic characters capturing, in a form of short hand, the word-for-word record of the testimony. The court reporter uses the paper tape to create a text translation of the tape. This translation is created using a typewriter or a word processor. The translation is referred to as a transcript of the testimony and is created "off-line" from the actual testimony.

More recently, stenograph machines and computer software programs have been developed which translate the phonetic characters while the stenograph operator is typing. The output of this automated translation is a stream of ASCII characters which are stored on a cassette or in a personal computer attached directly to the stenograph machine by a serial communications link. These types of stenograph machines and the associated computer and software are referred to as Computer-Aided Transcription or CAT systems. The output of the CAT system is an ASCII text computer file of the testimony. The court reporter edits the ASCII file to create a final version of the transcript which can be viewed on a computer or can be printed. The lawyer uses the ASCII file for many purposes including research of the deposition, preparation for trial and research prior to cross examination during trial. A variety of software tools have been developed which, among other things, allow a lawyer to electronically search testimony text for key words, to annotate, to insert page marks, to associate certain portions of testimony with issues and to create printouts of testimony for insertion in pleadings and trial presentations.

Along with the development of CAT systems, another parallel development has taken place. In major and/or complex litigation cases, testimony from depositions and/or a trial have been videotaped in addition to having a transcript created. The person performing the videotaping is called a videographer. The videographer uses a standard, commercially available videotape recording system. Videotaping proceeds simultaneously with the creation of the written record of the testimony by the court reporter. After the testimony is complete, the lawyer will normally ask the court reporter for a copy of the ASCII text file of the testimony and will ask the videographer for a copy of the videotapes of the testimony.

During the discovery and research phase of a litigation, the attorney will search through testimony for key statements made by a witness. The attorney uses software tools for searching and annotating the ASCII testimony. In addition, during a trial the attorney will present to the court and jury a specific part of the testimony. When testimony has

been videotaped, it is desirable to have the ability to use the video associated with key statements to impeach, or to expose an inconsistency between a witness' and earlier testimony or to show witness demeanor. Prior to the present invention, it has been difficult for attorneys to randomly search through testimony and then view the video information associated with key statements. To view the video, the attorney had to have access to a videotape player and either a TV screen or monitor. At the same time, it is difficult to show or review specific videotape segments during research or in trial because of the time consuming and inexact process of positioning the videotape to the correct location. In addition, some current systems require the attorney to select important video segments ahead of time so that a video editor can make a short videotape containing the segments of interest. It is difficult, if not impossible, to select new segments during trial if there is a change in testimony or theory.

While videotape retrieval systems are available and while some retrieval systems have been designed specifically for litigation, video depositions and court room presentations, all of these systems rely on videotape technology which is a linear video access technology. No matter how the videotape is indexed or linked with the text and no matter what type of system is used to control the location of the videotape and retrieval of video information, access to the tape is accomplished only by the time-consuming process of moving the tape linearly forward or backward.

One such videotape system is disclosed in U.S. Pat. No. 5,172,281 (Ardis et al.). The system in this patent uses analog video technology which is a linear technology and requires a tape deck and special PC card for viewing. Even though the videotape is indexed with information linking the video to the testimony, it is still necessary to linearly position the videotape. In addition, an end user must purchase both a PC and appropriate audio/video equipment.

Despite the numerous systems known for linking video to testimony, there is still a need for a system that stores video and written information on random access media (e.g., CD-ROM and diskette) to allow instantaneous access to any location in the video and that eliminates the need for a videotape deck and TV screen to view video. In addition, there is a need for a system which creates a product on random access media, and once created, can use existing software tools for researching and analyzing text and for instantaneously accessing the corresponding video information using only a single personal computer. There is also a need for a system which can create such a product from any type of event, legal or otherwise. The present invention fills this need.

## SUMMARY OF THE INVENTION

The present invention is a method of creating a video product with synchronized video and text of an event. Before the method is performed, a first video record is made of the event and stored on a first storage medium, and an original transcript of the event is made and stored on a second storage medium, the second storage medium being a random access medium. The original transcript contains spoken word information and format information. The format information includes page and line numbers. The first step of the method is to generate a converted transcript which includes only the spoken word information, but which maintains the same lines of spoken word information as in the original transcript. The lines of the converted transcript are sequentially numbered and have a predetermined rela-



tionship to the page and line numbers of the original transcript. Next, a second video record is made on a third storage medium from the first video record. The second video record has sequentially numbered video frames. The third storage medium is a random access storage medium. Next, the converted transcript is displayed on a computer while the second video record is played on the same computer. A signal is sent to the computer at each line of the converted transcript when the second video record matches the current line of text of the converted transcript. The signals and the video frame information are used to create an index of the page and line numbers of the original transcript to the video frames of the second video record. The page and line numbers are recreated from the converted transcript lines and the predetermined relationship therebetween. Next, the index and the converted transcript are stored on a fourth storage medium. The fourth storage medium is a random access medium. Together, the third and fourth storage media are the video product. The video product is usable to simultaneously play back the second video record, the corresponding transcript, and the original page and line numbers by using the index on the fourth storage medium.

In one embodiment of the invention, the signalling is performed by an operator. In other embodiments of the invention, SMPTE or time information stored on one or both of the original transcript and first storage medium are used to automatically create the video product.

In another embodiment of the invention, a method is provided to automatically create the video product in a real-time manner at a live event, or while playing back a recording of a live event.

Additional embodiments of the invention provide apparatus for performing the methods above.

#### BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing summary, as well as the following detailed description of preferred embodiments of the invention, will be better understood when read in conjunction with the appended drawings. For the purpose of illustrating the invention, there are shown in the drawings embodiments which are presently preferred. It should be understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown. In the drawings:

FIG. 1 is a system level schematic diagram showing the processes of a preferred embodiment of the present invention for creating a synchronized video product, the related video and text viewing software, and the manner in which these components interface with computer, videographic, stenographic and courtroom technologies;

FIG. 2 is a system level schematic diagram showing the physical configuration of equipment used for a VHS Tape Conversion Process in FIG. 1;

FIG. 3 is a system level diagram showing the physical configuration of computer equipment used for the Text Conversion Process and the Voice Synchronization Process in FIG. 1;

FIG. 4 is an operational flow diagram of the VHS Tape Conversion Process in FIG. 1;

FIG. 5 is an operational flow diagram of the ASCII Text Conversion Process in FIG. 1 which uses a Transcript Conversion Program (CONVERT);

FIG. 6 is a flow diagram of the Transcript Conversion Program;

FIG. 7 is an operational flow diagram of the Voice Synchronization Process in FIG. 1 which uses a Lip Syn-

chronization Program (LIPSYNC). FIG. 7 also shows the operational steps used when there is no time or SMPTE code information on the ASCII disks or VHS tapes created in the process of FIG. 1;

FIG. 8 is an operational flow diagram of the special operational steps used when there is time or SMPTE code information on the ASCII disks or VHS tapes created in FIG. 1;

FIGS. 9-14 are project log and processing sheets used to track projects, tapes, video files and ASCII files when performing the processes in FIG. 1; and

FIG. 15 is a system level diagram showing an alternative embodiment of the present invention wherein the synchronized video product is created from an event in real-time or from a prerecorded version of the event.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Certain terminology is used herein for convenience only and is not to be taken as a limitation on the present invention. The word "video" means either visual and audio data or just audio data. Viewing a "video" implies that the user is both seeing and hearing the video. However, certain disclosed and claimed steps of the present invention require only that the user "hear" the video. In the drawings, the same reference numerals are employed for designating the same elements throughout the several figures.

The present invention is explained in six sections. Section I is an overview of the present invention. Section II is a brief description of the software programs which were specifically developed to create and use a preferred inventive product. The software programs interface with existing software programs, identified below. Section III is a brief description of three overall processes which are required to create the preferred inventive product. Section IV is a detailed description of preferred embodiments for creating the inventive product, and are described in conjunction with FIGS. 1-8. Section V is an operations manual which provides a detailed description of the step-by-step tasks and related file structures for carrying out some of the preferred embodiments. Section V is described in conjunction with FIGS. 9-14. Section VI is a printout of the Form Text and graphical representation files for XCON (referred to as CONVERT below), LIPSYNC and VIDLINK for the preferred embodiments of the invention as described in Sections II-V. XCON is Part 1 of the printout, LIPSYNC is Part 2 of the printout, and VIDLINK is Part 3 of the printout.

The present invention is described in the context of capturing and synchronizing video and transcripts from a legal proceeding. However, the scope of the invention is much broader. The present invention may be used to capture and synchronize a recording of any event to a separately created transcript of the event. No video component may even exist for the event, such as in the case of a wiretap recording.

#### Section I-Overview of present invention

The present invention incorporates an integrated set of processes and a set of software programs for the transfer of videotaped testimony to a random access storage medium (e.g., CD-ROM), the synchronization of the video testimony with the text of the testimony, and the display of both video and synchronized text on a personal computer screen for the purposes of litigation research and video presentation during trial.

To take advantage of advances in digital video compression and recording technologies, all software programs were

developed using Microsoft's standard Windows and associated video interfaces. The present invention also makes use of existing software and hardware developed for Microsoft's Windows platform. This includes software and hardware for the capture, digitization, compression, editing and playback of digital video information.

The disclosed embodiment of the present invention works with current VHS tape systems for recording video depositions and provides a VHS Tape Conversion Process which can convert existing VHS tapes to compressed digital format and then transfer the digital video information to CD-ROM.

The indexing scheme used by attorneys to reference testimony is page and line number of a transcript (e.g., page 45, line 12). ASCII files created by different CAT systems have page and line numbers in different places and insert a variety of extraneous text lines in the footers and headers of the transcript. To have general applicability to current CAT systems and for the synchronization and text viewing software to be able to determine the testimony page and line number of the ASCII text, the present invention provides a process and software program for converting any ASCII file into a Common ASCII File Format. During the conversion, all extraneous text is removed from the ASCII File. A computer program allows for recreation of the correct page and line numbers from the Common ASCII File.

The compressed digital video information on CD-ROM must ultimately be synchronized with the text of testimony. Accordingly, the present invention provides a process and supporting software program for synchronizing testimony text in Common ASCII File Format with digital video files on CD-ROM.

Some currently marketed CAT systems can link to a video camera and stamp time or SMPTE code information on the ASCII data as it is generated. The present invention accommodates this additional time or SMPTE code information in the synchronization process. (A SMPTE code includes time, date and frame information.)

To view both text and synchronized video, the present invention provides a video and text viewing program for displaying on a computer screen the video that is stored on CD-ROM along with the synchronized text. In addition, to have applicability to existing text viewing software, the present invention has an Application Programming Interface (API) for the video viewing portion of the program that allows existing text viewing software to add the video capability. The video viewing API can interface with the most commonly used programs for viewing and researching testimony. For courtroom display of video, the video viewing portion of the program can enlarge the video display on the computer screen or a court room projection system, and uses standard CD-ROM changers and jukeboxes which hold several CD-ROMs at one time. This allows the attorney or program operator to have on-line access to several hours of video.

#### Section II-Brief description of the software programs

The following three software programs were developed as part of this invention. These programs are used in the processing steps for converting and synchronizing video and are used to display synchronized text and video on a computer screen. The programs were all developed Microsoft's Windows using Microsoft's Visual Basic for Windows and associated Visual Basic controls (VBXs) for audio and video. These controls provide a standard set of video functions such as open video file, play the file, advance to a specific frame, etc. By developing the programs for this invention using standard Microsoft Windows interfaces, the present invention can take advantage of future

advances in video compression and display technology, since such new technologies will adhere to the Microsoft Windows standard. The present invention can make use of any compression technology currently available that is compatible with Windows.

#### 1. Transcript Conversion Program (CONVERT)

The CONVERT program converts ASCII files received from a court reporter into a common format that allows a computer program to determine the page and line number of each line of testimony text. The program discards all extraneous text, such as headers and footers inserted by the court reporter. If time or SMPTE code information is available with the text, the program saves such information in a PRESYNC file. The program requires the operator to visually review an ASCII file prior to conversion in order to determine the starting column numbers of transcript text and any time or SMPTE code information.

#### 2. Lip Synchronization Program (LIPSYNC)

The LIPSYNC program is used to synchronize the text and video. The program allows the operator to load a text file and associated video files. Once loaded, the text and video is viewed in two windows on the computer screen. The operator plays the video and listens to the associated audio and, at the same time, reads the testimony text. While listening to the audio and reading the text, the operator presses special keyboard keys to synchronize the video and text. The output of the LIPSYNC program is a SYNC file that links every page and line of the testimony to a frame number in the video.

#### 3. Video and Text Viewer Program (VIDLINK)

The VIDLINK program is used by an operator to view synchronized video and text. The program creates two windows on a computer monitor. One window contains the text and the other window contains the associated video. The operator is given tools to search and scroll through the text and video. Whenever the operator moves to a new location in the text, the video jumps to the same point. Likewise, moving around in the video or playing the video in real time cause the text to move to the same point or to scroll along with the video. The VIDLINK program contains tools for importing a transcript and associated SYNC files and video. It also contains an application programming interface (API) for accessing the video viewer portion of the program. This API provides a standard interface to other transcript viewing programs that run on Windows. It allows such programs to add synchronized video to the respective text viewing functions of the program.

#### Section III-Brief description of processes

The following three processes are used to create an inventive product.

#### 1. VHS Tape Conversion Process

The Tape Conversion Process uses commercially available hardware and software products for capturing, digitizing and compressing digital video files in a specific format used by the Voice Synchronization Process and text and video display software (VIDLINK) of the invention. The process also uses existing hardware and software for writing digital video files to CD-ROM.

#### 2. ASCII Text Conversion Process

The Text Conversion Process uses the CONVERT program to convert an ASCII disk received from a court reporter into the Common ASCII File Format (CAFF) used by the Voice Synchronization Process and VIDLINK.

#### 3. Voice Synchronization Process

The Voice Synchronization Process uses the LIPSYNC program to link together digital video testimony on CD-ROM and ASCII text in Common ASCII File Format.

## Section IV-Detailed description

Referring to FIG. 1, a videographer makes a video recording (first video record) of testimony in a legal proceeding using a video camera 1 and videotape recorder 2. The process generates one or more VHS tapes 3 (first storage medium). Normally, one VHS tape holds up to two hours of video when recorded on its fastest speed, the speed that provides the best resolution. One day of testimony typically generates three or four tapes at the fastest speed. A court reporter (not shown) simultaneously records testimony using a transcription device or stenograph machine 4. The machine 4 normally records the testimony on a paper tape in the form of phonetic characters which are a shorthand, word-for-word record of the testimony. Alternatively, the machine 4 is equipped for Computer-Aided Transcription (CAT). The output of the machine 4 is recorded onto a cassette 4A, diskette 4B or onto a personal computer 5 connected by a serial communications cable 4C to the stenograph machine 4. Regardless of the method of recording, the software in a personal computer 5 creates the ASCII text of the testimony and copies the text onto a diskette 6 (second storage medium). The contents of the diskette 6 is thus an original transcript of the legal proceeding and includes spoken word information and format information. Format information includes page and line numbers, headers and footers. The header typically identifies the party being deposed or testifying and the footer typically identifies the transcript service provider. Some CAT systems may also be connected via a cable 2A to the videotape recorder 2 which generates a continuous time stamp or SMPTE code for insertion into the ASCII text, effectively time stamping each line of text. The same time or SMPTE code is also written to audio channel B of the VHS tape 3.

The VHS tape 3 goes through a Tape Conversion Process 7. The output of the Process 7 is a second video record on one or more CD-ROMs 10 (third storage medium). Each CD-ROM 10 includes sequentially numbered video frames (e.g., 1 to n). The diskette 6 goes through a Text Conversion Process 8 described below. The CD-ROM(s) 10 and diskette 6 are then used together in a Voice Synchronization Process 9, the output of which is a diskette 24 (fourth storage medium) containing synchronization files and converted text. Together, the CD-ROM(s) 10 and diskette 24 constitute the video product 26 created by the system. Video and Text Viewing Software 15 is used to check that the video product 26 was properly made. When it is desired to use the video product 26, the CD-ROM(s) 10 are loaded into a CD-ROM drive or multiple CD-ROM device such as a jukebox or CD-ROM changer 28 which is connected to a multimedia computer 30. The diskette 24 and Video and Text Viewing Software 15 are loaded into the multimedia computer 30, and the software 15 is started. The output of the multimedia computer 30 is displayed on the computer monitor. Alternatively, the output may be displayed on a projection system 32.

FIG. 2 shows the processing system used to transfer video on a VHS tape 3 to a random access storage medium, CD-ROM 10 (VHS Tape Conversion Process 7 shown in FIG. 1). The Processing 7 system includes one or more videotape playback decks 11 and an audio/video switch 12 for switching the deck output (audio, video and time code information) to one or more capture systems 13. Each capture system 13 includes a PC 14 configured with a large mass storage system 18 and a CD-ROM writer 19. The mass storage system 18 can be any high capacity, high volume, magnetic disk storage system. The requirements for the mass storage system 18 are a data transfer speed capable of

supporting real-time video capture (this currently requires magnetic disk technology) and a data storage size capable of holding several hours of digital compressed and un-compressed video information. The capture system PC 14 is also configured with a video capture hardware card compatible with Microsoft's Windows, such as an Intel Smart Video Recorder Pro card or an OptiVision MPEG capture card. The CD-ROM writers 19 are any commercially available CD-ROM writer and associated software capable of writing data files to CD recordable (CDR) media.

The capture system PCs 14 are connected via a Local Area Network (LAN) 20. Also attached to the LAN 20 are one or more compression computers 21. The compression computers 21 are high speed Intel Pentium or equivalent processors configured with Windows and digital video editing software compatible with Windows, such as Asymmetric's Digital Video Producer. The compression computers 21 perform digital video processing on video files that have been captured by the capture systems 13 and stored on a respective mass storage system 18. Since digital processing such as compression is very high in CPU utilization but very low in disk utilization, the video files are accessed via the LAN and don't have to be moved to a local drive of a compression computer 21. By keeping all digital video files in one location, it is not necessary to move around such very large files, an extremely time consuming process. Also, there is no capture software currently available that can run on the server of a client/server LAN. For these reasons, the LAN 20 is preferably a peer to peer LAN such as Microsoft's Windows for Workgroups.

Once the digital video files are created by the capture systems 13 and processed by the compression computers 21, they are written directly to CD-ROMs 10 by the CD-ROM writers 19. Again, since a peer to peer LAN is used, it is not necessary to move around such very large files. The files can be written directly to the CD-ROMs 10 from the mass storage systems 18. CD-ROM writers 19 require a very high data transfer rate during the write process. If the digital files were stored on a server in a client/server LAN, the LAN might not be able to maintain the required data transfer rate.

FIG. 4 shows an operational overview of the steps for transferring video from a single deposition having been previously recorded on one or more VHS tapes 3 to a CD-ROM. Video on the tapes 3 is captured, digitized and stored in files on the mass storage system 18. Depending on the type of video capture and digitization hardware used, the files may have to be compressed by the compression computers 21. Compression requires a significant amount of processing time. For example, it can take several seconds to compress one frame of digitized video. Since video frame rates range from 15 to 30 frames per second, compressing one hour of video can take several hours. To reduce the elapsed time needed for compression, the video on each VHS tape is separated into small files, called segments, during the capture process. The segments are then compressed by the compression computers 21 in parallel. Once compressed, the video segments are written to a CD-ROM 10.

One type of CD-ROM commonly used today holds about 640 MBytes. The optimal size of the video file segments needed to fill up each CD-ROM must be determined prior to capture. The size of the segments is also a function of the number of compression computers 21 and the length of video on each tape. For convenience during capture, video segments do not span from one tape to another. To calculate the optimal length of the segments to minimize elapsed processing time, the length of video on each tape must first be determined.

Referring to FIG. 4 (steps 100–104), each VHS tape 3 is loaded into a tape deck and fast forwarded to find the end of the video (step 102). The total time is recorded for each tape. Once the length of the video on each tape is known, the size of each video segment is determined (step 106). For example, one CD-ROM holds about 80 minutes of video when made as follows:

capture and compression hardware	Intel's Smart Video Recorder
capture and compression software	Intel's Indeo 3.2 compression algorithm
frame rate	15 frames per second
frame size	240 x 180
data rate	130 KBytes per second

If four compression computers 21 are available, each compression computer 21 compresses a 20 minute segment. If the VHS tape holds two hours (120 minutes) of video, then the capture process should separate the video into six, 20 minute segments. The first four 20 minute segments of tape 1 go onto a first CD-ROM. The next two 20 minute segments of tape 1 are combined with two 20 minute segments from tape 2 to fill out a second CD-ROM. Normally it is not possible to fill out the last CD-ROM since the total minutes of video on all VHS tapes will not be divisible by 80 minutes. Also, the number of minutes on each VHS tape varies, causing some segments to be less than 20 minutes.

Note that during the actual capture process, described below, the size of the segments change slightly to make clean cut points between each segment. During video testimony, there are many pauses in the audio. It is desirable to have a cut point (end of a segment) at one of the pauses so that the ending frame of one segment does not have to precisely match the beginning frame of the next segment. For example, segment one could end on frame 2300 and segment two could begin on frame 2302. There is no substantive loss of video information. In this manner, the need to have precise, frame level control over the tape deck is eliminated, which reduces the cost and complexity of the tape deck and operating costs.

Once the size of the segments for each VHS tape is determined, the actual capture and compression process begins. Referring again to FIGS. 2 and 4, the first step is to load a VHS tape 3 into the tape deck 11 (step 108). Next, the A/V switch 12 is switched to the appropriate capture system 13. Commercially available capture software compatible with Windows can be used, such as Asymmetric's Digital Video Producer video capture software. Such software is initialized to capture the next video segment (step 110). To perform step 110, a video segment file is established to receive the video as it is digitized and copied into the computer 14 by a video capture card. One suitable video capture card is an Intel Smart Video Recorder card. In addition to the video information, a small time code file is also established if the VHS tape has time code or SMPTE code information on it. The time code file holds the time code or SMPTE code information associated with the corresponding segment. Time code or SMPTE information is usually stored in audio channel B of the VHS tape 3. The tape deck 11 reads the time information and outputs the time information to the capture PC 14 for storage in the PRESYNC file.

When the capture software is ready, the tape deck 11 "play" button is pushed and the start capture command is entered into the capture PC software. Videographers normally have a small amount of blank video at the beginning of a VHS tape. Since there is no audio in the blank area, it

doesn't need to be captured. The tape deck thus starts prior to the capture software. Likewise, cut points between segments are done at pauses in the audio, allowing the capture software to be stopped prior to stopping the tape and allowing the tape to be started prior to restarting the capture software. A video processing sheet is used to manually record the start and stop locations for each segment. FIG. 12 (described further below) shows an example of such a sheet.

Referring again to FIGS. 2 and 4, a single mass storage system 18 may not be able to hold all the captured segments for all the VHS tapes 3. When capturing video segments (step 110), the amount of space left on the currently used mass storage system 18 must be monitored. When the mass storage system 18 is full (step 112), the captured segments must be compressed (step 114) and written to CD-ROM 10 (step 116) using the CD-ROM writer 19 and CD-ROM writer software. One suitable CD-ROM writer software is Corel's CD Creator. In step 114, video segments are compressed in parallel by the compression computers 21. The compression computers 21 access the video segments on the mass storage system 18 via the peer to peer LAN 20. Once all of the segments have been compressed using compression software such as Digital Video Producer, the segments are written to CD-ROM 10 and checked for good audio and video playback (step 116) using standard playback software, such as Microsoft's Media Player. If errors are present, the problem segment is either recompressed or possibly recaptured and recompressed depending on the type of error. Once the compressed segments have been moved to CD-ROM 10, the capture files are deleted from the mass storage system 18. Any more segments on the current VHS tape can then be captured (step 118). As the segments on each VHS tape are completed, new VHS tapes are loaded (step 108). The process continues until all tapes have been processed (step 120).

Some types of video capture hardware can compress the video during the actual capture process. That is, the hardware captures, digitizes and compresses all in one step. In this case, it is not necessary to use the compression computers 21. Instead, the captured video segments can be written directly to CD-ROM 10.

Compression algorithms that allow video to be captured and compressed in real time are called symmetrical algorithms. That is, the time needed to capture and compress is the same as the time needed to decompress and display on a computer screen. The Motion Picture Experts Group (MPEG) algorithm is an example. There are a variety of commercially available MPEG capture cards available. Compression algorithms that require more time to compress than to decompress for playback are called asymmetrical algorithms. Intel's Indeo algorithm is an example. The advantage of using capture hardware with symmetrical algorithms is that the lengthy compression step is eliminated. The disadvantage is that playback may require a special hardware card inserted in the playback PC. Asymmetrical algorithms on the other hand allow compressed video to be played without a special hardware card. For example, Intel's Indeo algorithm plays well on a 486 PC without special hardware.

The ASCII text file received from the court reporter must be converted into a format that allows the synchronization and viewing software to know the page and line number of the text. Page and line number characters are inserted into the text by the court reporter's software to be printed out and read by an operator. No computerized page and line number index is provided with the ASCII file. The present invention uses a specially developed software program and process to

## 11

convert any ASCII file into a Common ASCII File Format (CAFF) that can be accessed by a computer using page and line numbers. FIG. 5 is an overview of the process and FIG. 6 is a flow chart of the program.

Referring to FIGS. 3 and 5, the first step of the process is to copy the ASCII file on diskette 6 into the hard disk of text/video synchronization computer system 22 (step 122). Using a typical text editor such as Microsoft's Write Editor or a word processor such as WordPerfect, the text of the ASCII file is displayed on the computer screen. The starting page number within the text is read by the operator (step 124). (Some transcripts are continuations of earlier testimony and do not start on page 1.) The number of lines per page can be determined by scrolling down through the text and observing the maximum line number inserted by the court reporter. The starting page and line numbers are recorded on an ASCII Conversion Sheet (step 126). Also, if the ASCII file contains time code or SMPTE code information, the column number location of such data is recorded. FIG. 10 (described further below) shows an example of such a sheet. At the same time, if there is any extraneous information at the beginning or end of the ASCII file, such as court reporter address, such information is deleted using the text editor (step 128). It is important to preserve all text in the body of the file since deleting any text causes page and line numbers to be incorrect. Using the text editor, the left most column for the start of text for each line of testimony is determined by scrolling down through the text (step 130). The text of each line from the court reporter software starts in the same column for the entire transcript. The output of the text editor is saved as a new file, leaving the original ASCII file unaltered.

Referring to FIGS. 5 and 6, the Transcript Conversion Program (CONVERT) is then started (step 132). The name of the file saved by the text editor, the starting page number, the number of lines per page and the starting column number of the text must be entered into the CONVERT program. The logic of CONVERT is shown in FIG. 6. CONVERT creates the CAFF file for the transcript. A CAFF file has distinct lines, each terminated by carriage return and line feed. All extraneous headers, footers, blank lines, line numbers and page numbers, which are not part of the written testimony, are discarded.

When CONVERT starts, line count is set to one and the text file created by the text editor (steps 122-130) is opened on input (step 144). The program then scans to the start of line one on the first page of the transcript file (step 146). The scanning is accomplished by looking for the character "1" followed by spaces then text starting in the column number supplied, i.e. line one (1). If the first line of the first page cannot be found, an error message is printed (steps 148 and 150) and the program exits (step 166). If the first line can be found, the starting text column number is used to delete extraneous characters and spaces and the line number characters (step 152). Then the program scans the text to find the end of line (EOL) (step 154). Once the EOL is located, the line count is incremented (step 156) and the line is written out to an output file (step 158). If time or SMPTE codes have been inserted, such information is extracted and placed in the PRESYNC file. The process of locating a line, discarding extraneous information and then writing the line to an output file continues until the lines per page limit is reached (step 160). The line count is then set back to one and the program begins searching for line one of the next page, disregarding extraneous header and footer text (step 162). The process continues in the same manner until a "next page" cannot be found indicating that the end of the ASCII text has been

## 12

reached (step 164). The program then closes all files and exits (step 166).

The output of the CONVERT program is the ASCII text in CAFF format and optionally a PRESYNC file. The PRESYNC file contains an entry for each line of the transcript. Each entry contains the time or SMPTE code information for the line.

Referring to FIG. 5, once the Transcript Conversion Program has converted the ASCII text to a file of distinct lines without extraneous text, the converted text is loaded into the Video and Text Viewer Program (VIDLINK) (step 134) developed as part of the present invention. The VIDLINK program displays the text of the converted file along with calculated page and line numbers which are displayed in the left hand column next to each line of text. The program uses starting page number and number of lines per page to calculate the correct page and line number. It keeps track of the current line number of the file being displayed and divides that number by the lines per page. VIDLINK is a Windows program and its window can be displayed next to other Windows applications. By loading the original text file, using a text editor (step 136) such as Microsoft's Write Editor, the original and converted files can be displayed side by side (step 138). The operator then scans through the original text, reading the page and line numbers (line-by-line), and at the same time scanning through the converted text using the VIDLINK program that computes and displays the page and line numbers. The operator determines if the converted file matches the original file (step 140). If it does, the original ASCII file has been correctly converted. Otherwise, a new column number is used and/or the original text is edited slightly to eliminate extraneous text hindering the conversion program and CONVERT is run again (step 142).

Once the VHS tapes are converted to CD-ROM and once the original ASCII file is converted to CAFF, the text/video synchronization is completed using computer system 22 shown in FIG. 3 and the LIPSYNC program developed as part of the present invention. LIPSYNC is a Windows program developed using the Microsoft's Visual Basic and associated audio and video controls (VBXs). LIPSYNC allows the user to play (view and hear) a video while at the same time reading text of the associated CAFF file. LIPSYNC operates with any compression algorithm, and associated hardware and software, compatible with Microsoft's Windows. LIPSYNC displays video in one window while displaying text in another. Special keystrokes allow the operator to stop, start, forward and reverse the video and allow the operator to scroll up and down in the text. LIPSYNC displays text using the same page and line count logic of the VIDLINK program. That is, text is displayed along with the calculated page and line number information. By pressing the ENTER key, the operator links the current text line highlighted to the current video segment's frame number. The linking information is stored in a SYNC file.

FIG. 7 shows the procedure for using LIPSYNC. Referring to FIGS. 3 and 7, the operator puts on an audio headset 23 to hear the audio portion of the video and starts LIPSYNC by supplying a starting page number and number of lines per page (step 168). The operator then determines if time or SMPTE information is on the original ASCII disk or VHS tapes (step 170). If so, processing goes to the steps shown in FIG. 8 (described below). Otherwise, the operator opens the CAFF file and the first video segment (step 172). The CAFF file is shown in a text window on a computer screen of the computer system 22. The page and line

numbers for each line are also shown. The operator's job is to associate each line in the text with a frame number on one of the video segments stored on the CD-ROMs. The operator then starts playback of segment one by pressing the proper key and listens to the audio. Once some audio is heard (step 174), the operator stops the video and then scans the text looking for the words heard on the video, advancing the text using scroll keys until the words on the video can be seen in the text (step 176). There is also a text search function which allows the operator to scan the entire text. The operator establishes the initial synchronization point for the video and the text. The video is at a specific frame number and the text is at a specific page and line number.

The operator then starts the video playback (step 178) and listens to the audio while reading the corresponding text in the text window. The operator reads the words at the end of each line (EOL) and waits for the words to be spoken on the video (step 180). When the operator hears the words at the end of the line (step 182), ENTER is pressed which causes the program to link the text and video by recording the current page and line number and frame number in the SYNC file (step 184). At the same time the program automatically advances to the next line. The process continues until the end of the current video segment file is reached at which point the video stops (step 186). If there are more video segments and/or more CD-ROMs containing video segments (step 188), the operator opens the next video segment and starts the synchronization process again (step 190), synchronizing text with video until all video is complete. When all video files are complete, LIPSYNC writes out the SYNC file to diskette 24, and the process is complete (step 192). The converted text is also written to the diskette 24.

FIG. 8 shows the processing steps and use of LIPSYNC if there is time or SMPTE code on the ASCII disk 6 and/or the VHS tape 3. This process is different than the process of FIG. 7. Referring to FIG. 8, the first step is to have LIPSYNC open the CAFF file and the PRESYNC file (step 194). At this point, there are two processing options (step 196). The first option ("NO" in step 196) is used when the ASCII text contains time or SMPTE information but the VHS tapes do not have such information (steps 198 and 200). The second option ("YES" in step 196) is used when both the ASCII file and VHS tapes contain time or SMPTE code information (step 210).

For the first option, LIPSYNC is used to open the first video segment and locate the initial sync point (step 198), just like in steps 174 and 176 of FIG. 7. When the operator advances the text file to the initial synchronization location (step 198), the operator presses a special key that causes LIPSYNC to read the PRESYNC file and make an initial version of the SYNC file. The PRESYNC file contains time or SMPTE code information for each line of the text. Since the VHS tape doesn't contain such data, it is necessary to make an initial synchronization of the text and video. Once the initial synchronization is done, LIPSYNC fills in the SYNC file from the initial point forward (step 200) using the time or SMPTE code information from the PRESYNC file. The PRESYNC data is correct up to any point where the videographer turned off the video camera, causing a discontinuity in time in the video. Time or SMPTE code information in the ASCII file beyond such discontinuity point will be out of synchronization. LIPSYNC provides features that allows the operator to locate the discontinuities in the video. After the initial sync point is located and the SYNC file filled in using data from the PRESYNC file, the operator jumps to the end of the testimony and plays the video while reading

the synchronized text (step 202). If the text and video is out of sync (step 204), the operator does a binary search looking for the earliest point of discontinuity (step 206). LIPSYNC allows the operator to jump to a specific location in the video or transcript. The operator jumps from the end of the transcript (which was out of sync) to a point half way through the transcript. The video and text are played to see if they are in sync. If they are, the operator jumps half way toward the end of the transcript and checks the synchronization. If the video and text are out of sync, the operator jumps half way toward the beginning. This process continues until the first point of discontinuity in the video is found. The operator then presses a key to synchronize the text and video from that point forward (step 208) using data from the PRESYNC file in the same way that the initial sync point was established. The steps of (a) finding an initial sync point, (b) going to the end of the transcript and (c) locating points of discontinuity, continue until all the points of discontinuity have been located and properly resynchronized at which time the SYNC file is written out.

For the second option, the PRESYNC file is used to automatically generate the SYNC file (step 210) because the VHS tape contains time or SMPTE code information which can be linked directly to the transcript. The data was saved in the PRESYNC file during the capture process. For this option, LIPSYNC generates the SYNC file (step 210) and the operator then checks the results by examining different points in the transcript to make sure they are properly synchronized to the video (step 202). If an out of sync point is found (step 204), the binary search operation used for the first option is performed to find the point of discontinuity (step 206) and to correct it (step 208).

The output of LIPSYNC is a SYNC file that is an index, by page and line number of the video information on CD-ROM 10. There is an entry in the SYNC file for every line in the converted transcript. Associated with every entry is a video file segment name and the frame number offset into the video file (i.e., the frame number that was playing when the operator pressed ENTER for the line).

The SYNC file links together each line of a transcript with specific frame numbers on the video segment files associated with the transcript. To view synchronized video and text, a special Windows program, VIDLINK, developed as part of the present invention, displays both the text and the video in separate windows on a computer screen. Using VIDLINK, the user imports the text and SYNC files from either diskette 6, diskette 24 or CD-ROM 10 into the computer's hard disk. When the user opens the text file for viewing, the text appears in a window on the computer screen. The user can scroll from one location to another using standard text scroll functions. In addition, the user can open a video window for displaying the video segments stored on CD-ROM 10. When the video window is open, the VIDLINK program uses the associated SYNC file to determine the video segment and frame number offset corresponding to the current location (page and line) of the text file. Initially, the still image for the identified frame is displayed. The user then has the option to "play" the video by pressing a "play" button on the computer screen. The video then starts playing and the associated sound comes out of the computer's speakers. As VIDLINK is playing the video, it keeps track of the current video segment file and the current frame number. The software uses the SYNC file to track the current "sync" point in the text and automatically scrolls the text as the video plays. Alternatively, if the user scrolls through the text, VIDLINK uses the SYNC file to determine the current segment and frame number and displays the still image associated with



any location in the text. VIDLINK also contains standard text search features for finding specific text strings. When the search function finds a specific string, the program moves the video image to the same location. Any computer with a VGA monitor can display the video. Since courtroom projectors are typically attached to VGA monitors, the video can also be displayed on a courtroom projection system 32 (see FIG. 1). The video files are stored on CD-ROMs which, in turn, can be stored on CD-ROM changers or jukeboxes compatible with Microsoft's standard file I/O system.

The video viewing portion of VIDLINK has an application programming interface (API) that allows other text viewing Windows programs to add the synchronized video capability. The video viewing software runs as a separate Windows application. The API provides communication between the video viewing application and other text viewing applications. Software commands are exchanged between the two applications. Commands from the text viewing software to the video viewer include the following two commands:

OPEN (open the SYNC file associated with the text file currently being displayed)

GO TO (move the still image window to the frame associated with a specific page and line of the text)

Commands from video viewing software, to the text viewing software, include the following command:

GO TO (scroll the text location to the specified page and line number)

Other commands are used to coordinate which text and SYNC files are open, to import SYNC files into the system, and to launch and close the video application.

An example of this API is the interface between VidLink and the transcript viewing software LiveNote.

It is also within the scope of the present invention to create the video product 26 of an event in real-time or from a prerecorded version of the event.

FIG. 15 shows a system level diagram of this alternative embodiment. This alternative takes advantage of (a) new CAT software that can generate the equivalent of a CAFF file in real time (for example LiveNote for Windows) (b) video capture hardware and software that can capture, digitize and compress a video signal in real time and (c) advances in SCSI device technology that allow a single computer to be configured with both a CD-ROM recorder and several gigabytes of hard disk space. For this alternative embodiment, a single PC 42 is configured with Real Time Transcription software 43 which creates the equivalent of a CAFF file in real time, and Real Time Video Capture Hardware and Software 44 for capturing and storing video on the PC's hard drive. An example of this hardware and software is OptiVision's video capture hardware and software. Since the digital information is compressed, a local hard drive has enough room to store the video for one day of testimony. A 6 gigabyte local drive (for example, an internal SCSI drive) can easily hold eight hours of compressed digital video information.

For this alternative, the court reporter uses a stenograph machine 4 to record testimony. The output 47 of the stenograph machine 4 is sent to the PC 42 where it is converted into the equivalent of a CAFF file and stored on the PC's local hard drive by the Real Time Transcription Software 43. The testimony is either live (block 34 in FIG. 15) or is played back from a VHS tape recording 35 of prior testimony using a video tape recorder 36 (block 38 in FIG. 15). For live testimony 34, the court reporter listens to the spoken testimony in real time while a video camera 1 records the testimony. For prerecorded testimony 38, the court reporter

watches a TV screen 37 while listening to the prerecorded testimony. In either case, the video information (either the output 39 of the video camera 1 or output 40 of the video recorder 36) is sent to the PC 42 to be captured, digitized, compressed and stored on the PC's 42 local hard drive.

The PC 42 contains Real Time Voice Sync Software 45, similar to the software developed for the Voice Sync Process (element 9 in FIG. 1) which has an interface to the Real Time Video Capture Hardware and Software 44 and an interface to the Real Time Transcription Software 43. The Real Time Voice Sync Software 45 continuously reads the output of the Real Time Transcription Software 43. At the same time, it continuously reads the output of the Real Time Video Capture Hardware and Software 44. This allows the Real Time Voice Sync Software 44 to generate a page and line number index of the video information. This index is generated in real time and is stored as a file on the PC's local drive. At the conclusion of the testimony, Video Transcript Creation Software 46 writes the transcript and associated SYNC file to a diskette 24, and writes the video information to one or more CD-ROMs 10. The transcript and SYNC files are identical in format to the transcript and SYNC files created by the Text Conversion Process (element 8 of FIG. 1) and the Voice Synchronization Process (element 9 of FIG. 1). Together, the diskette 24 and CD-ROMs 10 comprise a video product 26 identical to the video product 26 created in FIG. 1.

Special control functions in the Real Time Voice Sync Software 45 and the Video Transcript Creation Software 46 provide the ability to start and stop the live recording of video, for instance when there is break in testimony. This allows the compressed digital video information to be broken down into several smaller segments in a manner similar to the way the VHS Tape Conversion Process (element 7 in FIG. 1) breaks video into segments. Segments are created whenever there is a break in the testimony, or when the operator of the system determines that a new segment must be started (i.e., the equivalent of changing a VHS tape).

#### Section V-Operations Manual

The manual presumes that the process of creating the synchronized product is performed by a service company for a particular client wherein the creation of the product is a "Project." There would be no "client" if the process is performed in-house. However, the appropriate identifiers are still used. In the example below, the client's name is "CLIENT".

This manual was written for a specific compression technology, Intel's Indeo 3.2 compression, and associated capture, compression and editing tools. These tools include VIDCAP, a software program for capturing video; VIDEDIT, a software program for editing and compressing video; and Corel CD-Creator, a software program for writing a video file to CD-ROM. The video files for the Indeo 3.2 compression all have the AVI file extension which is Microsoft's audio video interleave file format. Other video file formats and associated extensions compatible with Windows and the audio/video controls of Microsoft's Visual Basic could also be used. A similar manual would be created for other compression technologies such as MPEG compression. In that case, the capture, compression and editing tools would be those associated with MPEG.

The manual was written for an operation wherein no PRESYNC file and associated data is available on the ASCII diskette or VHS tape.

## Table Of Contents

1.0 Overview	
1.1 System Configuration	
1.2 Operational Overview	
2.0 Tracking projects, tapes, video files and ASCII files	
2.1 Directories and File Naming Conventions	
2.2 Physical Storage Of Project Material	
2.3 Project Log and Processing Sheets	
2.3.1 Project Sheet (FIG. 9)	
2.3.2 ASCII Conversion Sheet (FIG. 10)	
2.3.3 Audio and Video Settings Sheet (FIG. 11)	
2.3.4 Video Processing Sheet (FIG. 12)	
2.3.5 LIPSYNC Processing Sheet (FIG. 13)	
2.3.6 Quality Control Check Off Sheet (FIG. 14)	
2.4 Logging and storing tapes and disks	
3.0 Steps For Converting An ASCII File	
4.0 Capturing RAW Segments	
4.1 Loading The VHS Tape and Starting VIDCAP	
4.2 Setting Audio and Video Levels For A Tape	
4.2.1 Setting The Audio Levels	
4.2.2 Setting Video Level Steps	
4.3 Capturing Raw Segments	
4.3.1 Set up the capture file	
4.3.2 Setting the proper capture parameters	
4.3.3 Starting the capture. VIDCAP/Capture/Video	
4.3.4 Capturing the next segment	
4.4 Determining The Proper Length Of A Segment	
4.4.1 Segment Lengths For Enhanced Conversion	
4.4.2 Segment Lengths For Direct Conversion	
5.0 Compressing each raw segment	
6.0 Writing The CD-ROM	
6.1 Creating A Jewel Case Cover	
7.0 Doing the Lip Synchronization	
7.1 Overview	
7.2 LIPSYNC Operating Procedures	
8.0 Quality Control (Check Off Sheet-FIG. 14)	
9.0 The Finished Product	
10.0 The VHS Tapes and Diskettes	
1.0 Overview	
The material in this manual is inter-related.	
1.1 System Configuration	
The video processing system of the present invention includes three or more PCs connected by a local area network (LAN). Each of the PCs runs Microsoft's Windows For Workgroups (WFW) and can access the files on the other PCs.	
One of the PCs is a Capture PC. The other PCs are Compression PCs. The Capture PC is configured with a video capture card, a CD-ROM writer and several gigabytes of disk storage. The Compression PCs contain a single hard drive.	
The Capture PC contains several 2 gigabyte hard drives. The drives are designated d:, e:, f:, etc. The hard drives are accessed by the Compression PCs via WFW. The drive letters on the Compression PCs may not be the same as the Capture PC. For example, drive e: on the Capture PC may be drive f: on the Compression PC.	
In addition to the Capture PC and Compression PCs, there are one or more General Purpose PCs. One of the general purpose PCs has a printer attached. The general purpose PCs are used for: 1) processing deposition text, 2) performing lip synchronization, and 3) printing jewel case (CD box) covers. The Capture and Compression PCs contain very high speed Intel Pentium microprocessors or equivalents. The General Purpose PCs are Intel 386/486 machines or equivalents.	

## 1.2 Operational Overview

The following processing steps are performed to convert VHS tapes to CD-ROMs and to link the video to text of the deposition.

- 5 (a) Tapes and disks received are logged in and project files are set up.
- (b) The ASCII files are converted to a format that can be read (imported) into LiveNote and can be used by the LIPSYNC program. The conversion is normally accomplished on one of the General Purpose PCs.
- 10 (c) Each set of video tapes for a deposition is digitized and read into the Capture PC using the video capture card. Normally, each tape is separated into several 20 minute or less segments, see 4.4 for information on segment size. When first captured, the segments are stored as Raw files in the Capture PC. The raw files are stored on the Capture PC's drives d:, e:, f:, etc.
- 15 (d) Each Raw file is compressed down to a smaller compressed file, if desired. This compression is performed by the Compression PCs and the Capture PC. The Compression PCs access the raw files on the Capture PC via the network. Both the raw and compressed files remain on the Capture PC which has a CD writer attached to it.
- 20 (e) All of the compressed files for a deposition (this could be from several tapes) are written to one or more CD-ROMs on the Capture PC.
- 25 (f) Using the CD-ROMs and the converted ASCII text, LIPSYNC is run on the General Purpose PC to synchronize the text and video.
- 30

Due to the limitations of the amount of disk space needed to store all of the files for a deposition, the process of capturing, compressing and writing to CD-ROM is separated into several batches.

- 35 2.0 Tracking projects, tapes, video files and ASCII files.
- Each job for a client is called a Project. A new Project name is established whenever a new set of tapes and/or disks is received. The name can be up to eight alpha characters long (no numbers are allowed). The first name of a law firm's name is normally used. For instance a project for CLIENT might be "CLIENT." Since there may be several jobs for a client, the project name further includes a number, for example, CLIENT.001, CLIENT.002, etc.
- 40

The project name and number is used to create a subdirectory on all disks of the Capture PC and the D: drive of the General Purpose PC. The name of each subdirectory is the project name and number. For example, if drives D:, E: and F: are used for the CLIENT.002 project, then a subdirectory with the name CLIENT.002 would be created on each of the drives. The subdirectory is off the root and the subdirectories are used to store the video files (Raw and Compressed).

An identical project subdirectory is set up on the General Purpose PC D: drive, for example, D:\CLIENT.001. The directory is used to store all ASCII files (\*.ASC), Deposition files (\*.DEP), text files (\*.TXT) and sync files (\*.SYN and \*.SCD). A subdirectory called LETTERS is used for all correspondence files such as letters and receipt notifications. Depositions within a project are assigned a two digit number starting at 01 and going to 99. If there are more than 99 depositions, the project must be separated into two projects. Each deposition is further separated into several video segments as previously described.

## 2.1 Directories and File Naming Conventions

Project subdirectories off the root are defined using eight alphas and three digits, for example, CLIENT.001. An example of a project's subdirectory and file organization is as follows:



On The Capture PC

D:\CLIENT.001 Video directory for the project on the capture PC drives.

E:\CLIENT.001

F:\CLIENT.001

G:\CLIENT.001

DnnSmm[RW or CM] .AVI Video file names. Where nn is the deposition number, mm is the video segment number for the deposition, RW means Raw, CM means compressed and AVI is the file extension for all MS VFW files.

On The General Purpose PC

D:\CLIENT.001 Holds all ASC, TXT, DEP and SYN files

DnnORIG.ASC Copy of original ASCII file for the deposition number nn.

DnnORIG.TXT Copy of original ASCII file after being pre-processed using the text editor and saved as a TXT file.

DnnCNVT.TXT Output of the Transcript Conversion program (CONVERT) which used DnnORIG.TXT as input.

Dnn.DEP Copy of the deposition processing file created and used by the LIPSYNC program.

Dnn.SYN Copy of the sync file created by the LIPSYNC program.

Dnn.SCD Copy of the Smart CD sync file created by the LIPSYNC program. This file is used by systems that have a CD-ROM changer and Smart CD software. The sync information is identical to the \*.SYN file except the path to each video segment contains the volume name of each CD-ROM. This allows all CD-ROMs to be configured as a single disk drive with different paths to each physical CD.

\LETTERS Holds all correspondence to clients

RNO.DOC Receipt notification

INV.DOC Return notification - inventory sheet

LETTERn.DOC Copies of all letters, n = 1-9

INVOICE n.DOC Copies of all invoices, n = 1-9

**2.2 Physical Storage Of Project Material**

A file cabinet drawer or drawers are assigned to each project to hold all the tapes and disks. The name of the project is put on each drawer.

**2.3 Project Log and Processing Sheets**

A project log is maintained. The log is a three ring binder that contains special processing sheets for each project. The sheets are described below. Blank copies of the sheets are provided on the following pages.

**2.3.1 Project Sheet (FIG. 9)**

Used to establish a project name (e.g. CLIENT.001) and to establish a number for each deposition in the project. The Project Sheet includes the following information:

Name of Project

Shipment Received-Enter date all tapes and disks received

Receipt sent-Enter date Receipt Notification sent to client

All originals sent-Enter date when all original tapes and diskettes have been sent back to the client.

All CD-ROMs-Enter date all CD-ROM \*.TXT, \*.SYN and \*.SCD files sent and invoice has been issued.

For each deposition in the project enter the following information:

Last name of deponent

Number assigned to this deposition

Number of tapes for the deposition

Name of the ASCII file or files received.

Date the original material was received

Date the original material sent back

Date the CD-ROM TXT, SYN and SCD files sent

Use additional project sheets as required if there are several depositions. Fill in the Page\_of\_\_area.

**2.3.2 ASCII Conversion Sheet (FIG. 10)**

The ASCII conversion sheet is used to record the following information about the conversion of each ASCII file received for a deposition: (In some cases, more than one file must be merged together using the text editor. In this case, use a separate line for each file name.)

Deposition Name-Enter last name of deponent

Nmbr-Enter deposition number

Org ASC-Enter original ASCII file name. (DnnORIG.ASC)

Orig TXT-Enter original TXT file name (output of the text editor process) (DnnORIG.TXT)

Cnvtrd TXT-Enter the converted TXT file name (DnnCNVT.TXT)

Enter the Lines per page, starting page number, column number used when converting, date converted and any comments regarding the conversion.

**2.3.3 Audio and Video Settings Sheet (FIG. 11)**

The Audio and Video Settings Sheet is used to save the following video/audio settings for each tape.

Audio Settings-For each tape, fill in the Master (M), Treble(T), Bass (B) and Line In(L) settings. Note: MIDI, WAV and Speaker should normally be set to five.

Video Settings-For each tape, fill in the Contrast(C), Tint(T), Saturation(S), Brightness(B) and Crop (CP) settings.

Note: See section 4.0 for instructions on filling values for audio and video settings.

**2.3.4 Video Processing Sheet (FIG. 12)**

There are one or more video processing sheets maintained for each deposition. The Video Processing Sheets are used to keep track of the batches of video segments, the individual raw and compressed files and the number and size of files needed to fill out a CD-ROM. Each sheet includes the following information:

Project/Deposition Names-fill in the project and deposition name and number. If more than one sheet is needed, fill in the Sheet of area for each new sheet.

Tape Number (TN)-As each tape is processed, fill in the tape number. Note: For each new tape, an entry must be made in the Audio and Video Settings Sheet.

Segment Number-This is the DnnSmm number for this segment.

Tape Deck-Fill in the tape deck counters for the start and stop of each segment as it is captured. These are used to redo a capture session.

Capture-Fill in the number of minutes captured, the size of the capture file, the number of frames in the capture file and the capture PC drive letter used, e.g. E, F, G or H.

Compression-Fill in the Processing unit that is used to do the compression (ZEOS 1, DELL, etc.) and the final compressed size (in megabytes) of the compressed file. Also fill in the amount of time it took to compress the file.

Writing CD-ROM. Fill in the CD-ROM number (e.g. CLIENT023), the date/time the CD-ROM was written

and enter a check mark when each video file has been checked using the media player and purged from the compression PC drive (along with the raw file).

#### Comments

##### 2.3.5 LIPSYNC Processing Sheet (FIG. 13)

The LIPSYNC Processing Sheet is used to track the progress of the LIPSYNC operation for a deposition. One sheet is used for each deposition. At the top of the sheet is general information about the deposition. This includes:

Project Name-Enter project name and sheet number, if required.

Deposition Name and Number-Entered as each new deposition is started.

.TXT File-Name of the .TXT file used

.DEP File-Name of the DEP file created

SYN File-Name of the SYN file created. Note: the SCD file will be given the same name by the system.

For each video file (segment) on the CD-ROMs for the deposition, the following information is recorded:

CD-ROM Nmbr-The number of each CD-ROM as it is processed

File Nmbr-The file number of each file as it is processed. This file number is assigned by the LIPSYNC program.

Starting page and line number for the file

Ending page and line number for the file

Date and time the synchronization was completed for the file.

##### 2.3.6 Quality Control Check Off Sheet

The Quality Control Check Off Sheet has two functions. First, it is used to track the actual importing of the TXT and .SYN files into VIDLINK and to make several checks of the CD-ROM, the TXT file and the .SYN file. The following information is recorded in the top block:

Project Name-Name of project and sheet number if required.

Date (MM/DD/YY)

Deposition Name and Number

Test Check offs. Check each block when the test is complete:

(a) .TXT-Imported the TXT file into VIDLINK

(b) .SYN-Imported the SYN file into VIDLINK

(c) Last Lines Compared-Use WRITE to bring up the original ASCII file and then compare the last page/line number in the original with the page and line number of the VIDLINK file.

(d) Random Compares are OK-Compare various page/line numbers of the original with the VIDLINK transcript.

(e) Random Play is OK-Pick random points in the transcript and play the video. Make sure each CD-ROM is loaded.

Then, the next section is used to check the transition points between each video file. The location of each transition point is first determined and then VidNote is used to "play across" each transition point to make sure it is smooth and without errors.

The length, in minutes, of each file (segment) is first entered for each file. The times were display when LIPSYNC was used to create the SYN file. When SYN file was created, the individual times were written on this sheet.

Using the individual file lengths, the cumulative or running time of each transition can be calculated. Each transition can

then be examined in VIDLINK by advancing the deposition to a point in time a few seconds before the transition and then playing the video across the transition.

Note that the VIDLINK slide bar is set to seconds instead of percent of tape.

CD-ROM Nmbr-The number of each CD-ROM as it is processed

File Name-The file number of each file as the transition at the end is examined.

File Length-Length of each video file in hours, minutes, and seconds to the hundredths place.

Cumulative Length-Sum the file length columns as VidNote will show the cumulative time into the deposition video. Transition playback check off. Check if the transition appears OK.

#### 2.4 Logging and storing tapes and disks.

If not already done, set up physical files and computer files for the job.

Log in receipt of tapes and ASCII disks on the Project Sheet (FIG. 9). Send back a Receipt Notification, put a copy in the Project Log, and store the file in the \LETTERS area of the general purpose PC.

Assign a deposition number to each deposition in the project. Use the convention D01, D02, etc. There will be a deponent name and date (of the beginning of the deposition) for each deposition number. These are listed on the Project Sheet.

#### 3.0 Steps For Converting An ASCII File

Load the original ASCII file into the project file area of the General Purpose PC, e.g. D:\CLIENT.001\D01 ORIG.ASC. Use the file extension ASC, the deposition number and ORIG to denote original. For example D01 ORIG.ASC.

Use the text editor to look at the file to determine the number of lines per page, the starting column for the text and the starting and ending page numbers. Some of the beginning pages and ending pages may be deleted if they contain junk. Do not delete any text in the middle of the files, since such deletions causes page/line numbers to be incorrect. Save the new file with the TXT extension, for example, D01 ORIG.TXT. Write the page, line and column numbers in the Processing Log.

Note: Deposition ASCII files normally have page numbers at the top right with line numbers typed along the side. Indented from the line numbers will be the actual text. The Transcript Conversion Program (CONVERT) program strips out all page and line numbers and arranges the text as single, distinct lines, the format required by VIDLINK. CONVERT needs to know the column number of the start of the actual text. Try to determine the column number of the column just to the right of the text. Scan down in the transcript to make sure the column is blank all the way to the bottom of the transcript.

Use the Transcript Conversion Program (CONVERT) to convert the TXT file to CAFF format. Use TXT as the file extension for the output file along with CNVT, for example, D01 CNVT.TXT Once the file has been converted, import the file into VIDLINK and view the original file (.ASC) using WRITE and the converted file using VIDLINK to make sure the page and line numbers are correct. Go to the end of each file to make sure everything is correct. If there are problems, adjust the starting column number and/or delete junk text at the beginning or end. Do not delete text in the middle of the file.

#### 4.0 Capturing RAW Segments

Normally, each raw segment should be about 20 minutes long, see Section 4.4. However, the raw segment needed to "fill out" the end of the 640 MB CD-ROM will be less than 20 minutes. See 4.4 below for details. The raw segments are stored in the project subdirectory on Capture PC disks, e.g. E:\CLIENT.001\D01S01RW.AVI.

#### 4.1 Loading The VHS Tape and Starting VIDCAP

Load the VHS tape into the tape deck and start VIDCAP. Play a few minutes to make sure the video looks fairly good. Rewind the tape to the beginning and advance past any junk. When capturing, the video quality (using VIDCAP controls) and audio quality must be adjusted by following the steps described below.

Once the audio and video levels are set, save the settings for the video tape. The settings should be good for the entire tape. There will be a new set of settings for each tape.

#### 4.2 Setting Audio and Video Levels For A Tape

The audio and video levels must be set once for each tape. The levels are recorded in the Audio and Video Settings Sheet (FIG. 11).

##### 4.2.1 Setting The Audio Levels

First, press play on the VCR. Then go into the VidCap program. You should see and hear the video. Follow these four steps to set the audio level:

1. VIDCAP/OPTIONS/AUDIO FORMAT/LEVEL. Move the recording level window over to the side.
2. Bring up the Creative Mixer window using Alt Tab to go into the Program Manager.
3. Adjust Master, Bass, Treble and Line In. Record the settings in the Audio and Video Settings Sheet. Save the settings on exit. The settings will probably be OK for the entire tape. New settings will be required for the next tape. To determine the numeric value of a setting, assume each horizontal line on the slide bar is one unit. When the slider is at the bottom, the setting is zero. When the slider covers the bottom line, the setting is 0.5. When the slider is on top of (sitting on) the bottom line, the setting is 1.0 and so forth up to a maximum value of 7.0.

Adjust Master and Line In so that the audio quality is pleasant and the Record Level (from VIDCAP/OPTIONS/AUDIO FORMAT/LEVEL) indicator never goes further than two thirds of maximum.

Note: Midi and WAV should be set to five. They are not used on input. Also, Speaker output is normally set to 5. The value may be changed during video playback.

4. Press OK on Preferences, Recording Level, Audio Format.

##### 4.2.2 Setting Video Level Steps

1. Reduce the overall size of the VIDCAP window to be tight around the video window. Move VIDCAP (and the video window) to the lower right hand corner.
2. Go to Option/Video Source and move the window to the upper left so that you can see the controls and video at the same time.
3. Play the video, adjust the settings and SAVE the settings in the Audio and Video Settings sheet (FIG. 11). The settings will probably be used for the entire tape.
4. Crop the video, if necessary. If the videographer maintains a close up view of the person providing testimony, crop is not needed. Otherwise, increase the crop level to 5 or 6. Do not delete date/time display. Do not cut off the person's head or other important areas.

Also, remember that a good videographer will periodically pan in and out on the person giving the deposition. If you crop the picture tightly when the videographer has panned out, then the head will be cut off when the videographer pans in.

5. Set Brightness, Contrast, Tint and Saturation. Keep Saturation as low as possible.
6. Save the settings. Write the levels on the Audio and Video Settings Sheet (FIG. 11).

#### 4.3 Capturing Raw Segments

Normally several raw segments are captured in a batch of 3 to 4 segments. Capture one segment right after another, pausing only to set up a new capture file. When the batch of captured segments is complete, compress all the raw files in the batch and move them on to CD-ROM to free up disk space so that another batch of raw segments can be captured.

##### 4.3.1 Set up the capture file.

Set up the output file by using VIDCAP/FILE/SET CAPTURE FILE. Use the following file name convention for the raw files. D01S01RW.AVI, D01S02RW.AVI, etc. Make sure the capture file size is greater than 1 0 Mbyte and that there is enough disk space on this drive for the new Raw file. Most of the time it will be. Make sure you have enough disk space for the capture file. See 4.4 below.

##### 4.3.2 Setting the proper capture parameters.

- 25 Use the following steps for the captured parameters:

VIDCAP/Options/Audio Format use 8 bit, 22 khz and mono.

VIDCAP/Option/Video Format use Indeo RAW with a size of 240X180 (note, this should be the default)

- 30 Video compression should say No Recompression.

##### 4.3.3 Starting the capture. VIDCAP/Capture/Video

1. Set the proper capture parameters

Frame rate-15 FPS

Disable the capture time limit (use one of the egg timers)

Capture Audio and Capture to disk

- Recheck audio, video and compression settings from the menu.

2. Move the video window to the center of the screen

3. Start the capture by clicking on OK. You will receive one additional OK that displays the capture file name. Press Play on the VCR to start the video. The moment you see a clear picture, press Enter on the final OK. The capture should start and frame and second counts will appear.

When the capture has just begun, watch the capture window for a few moments to make sure no frames are being dropped. If any frames are being dropped, the hardware needs to be reset. Stop the tape and rewind it to the same starting point (use the VCR counters). Exit out of VidCap and Windows. Reboot the computer and start all over. If frames are not being dropped, let the capture continue on. Check your watch or set an egg timer. You will normally capture approximately 20 minutes. See 4.4 below. You must try to stop the raw capture at a lull (one or more seconds) in the conversation. To stop the capture, wait for a lull, press ESC (this will stop the capture) and then press stop on the VCR. Press the VCR PAUSE button (not the STOP button) slightly after stopping the capture. Since you are in a lull in the conversation, you are eliminating a small amount of silence.

If you are toward the end of the tape and you hit the end before 20 minutes, press ESC to stop the capture.

Keep an eye (and ear) on the tape when capturing to make sure you stop capturing (by pressing ESC) if you hit the end of tape or the video stops.

No frames should be dropped (zero frames dropped).

When you PAUSE the tape, leave it at the same position for the next raw capture (unless you are at the end of the tape). The VCR will hold the PAUSE position for about 120 seconds, plenty of time to set up the next raw capture. In the final raw capture for the batch, let the VCR go to the STOP position, which it will do automatically after about 120 seconds.

#### 4.3.4 Capturing the next segment

To capture the next segment on the tape, simply select a new capture file by using FILE/SET CAPTURE FILE with a new RAW file name. All the settings remain the same. Normally you can do this quickly, while the tape is PAUSED.

You will capture several segments in a batch and then compress the segments to free up disk space. In the last segment of the batch, STOP the VCR at its current location, which will be the starting point for the next batch.

#### 4.4 Determining The Proper Length Of A Segment

The length of a raw segment is a function of the following factors:

The amount of disk space available. Normally disk space has been freed up by the compression process.

The estimated number and size of the segments needed to fill up the next CD-ROM.

The estimated time left on the current tape. The PC to be used to compress the segment. Some PCs are faster than other.

#### 4.4.1 Segment Lengths For Enhanced Conversion

For enhanced conversion, the CD-ROM can hold about 81 minutes of video. With three fast compression PCs and one slower capture PC (slower for compressing) the ideal mix of segments is three 22 minute segments and one 15 minute segment, which add up to 81 minutes.

For enhanced conversion, 81 minutes will take up about 3.7 GB of disk space for the raw files and about 633 MB of space compressed. The CD-ROM can hold up to 640 MB.

#### 4.4.2 Segment Lengths For Direct Conversion

A CD-ROM can hold about 120 minutes of video. Thus, use four thirty minute segment of video. Segment links for direct conversion should be thirty minutes.

#### 5.0 Compressing each raw segment.

The raw files for a batch will be on the Capture PC's disks. The raw files must be compressed before they are stored on CD-ROM. The Compression PCs and the Capture PC can be used to compress the raw files.

VidEdit is used to compress a raw file. Start VidEdit on each of the Compression PCs and Capture PC. Follow these three steps for each PC.

1. Open the raw file using FILE/OPEN. Make sure to select the proper file. The Compression PCs will compress files physically located on the Capture PC, e.g. drives d:,e:, etc.
2. Do File/Save AS from the VidEdit menu.

Use the DnnSmmCM.AVI name convention, e.g. D01 S01 CM.AVI

Using Compression Options, select Intel Indeo, Video 3.2.

Normally this can be done by selecting the "Default".

Under Details use the following

Category	For Direct	For Enhanced
Data Rate	65K	130K
Interleave	Audio1 frame	1 frame
Key frame every	4 frames	4 frames
Pad frames for CD playback	yes	yes
Video Quality	100	100

Note: By selecting the Default, most of these setting will be correct. Make sure to set all settings.

3. Start the compression by clicking OK. Check the number of frames being compressed per minute to estimate the length time to compress the raw file.

#### 6.0 Writing The CD-ROM

- 5 Once all of the raw files have been compressed for a batch, they are written directly to CD-ROM (if there is enough space to fill out the 640 Mbytes of the CD-ROM).

Start Corel CD Creator on the Capture PC.

Under DISC, create a subdirectory on the CD called VIDEO which holds the compressed video files. Highlight the VIDEO directory to add the files to the directory and not to the root of the CD-ROM.

Use Add Items up to 640 for selecting the video files to be copied.

- 15 Mbytes per CD. Try to have around 630 Mbytes. Use Browse to change the drive letter.

Go to FILE/CREATE CD-FROM LAYOUT and select the following settings

Write speed is 2x150K

Write protect on

Single track on

Set a volume name of {project name}nnX where nn is the deposition number and X is the CD-ROM number for the deposition (X=1-9). For example CLIENT018. If there are more than 9 CD-ROMs for this deposition, use letters of the alphabet starting at A after number "9". For example CLIENT01C would be the 12th CD-ROM for deposition number 01.

Set the Disc Title to the deposition name by selecting Disc Properties and then the Disc Title field.

Always use a two digit deposition number even if you have to fill in a leading zero.

Project name is never larger than 8 characters so there are at most 11 characters. Also, project names always contain alpha characters so you will always know where the deposition number begins.

You will normally make one copy.

Click on "create CD-ROM" and watch for any error messages.

When the "writing CD" message comes up, you can leave it alone for about 20 minutes. You can create and print a jewel case cover while you are waiting.

When done, check that there are no error messages.

Insert the jewel case cover into the jewel case.

At this point, it is very important to check the quality of the CD-ROM. Occasionally, the CD-ROM will not operate properly and it should be rewritten before deleting the compressed files. Place the CD-ROM in a CD-ROM drive on the capture PC (not the CD-ROM writer). Use the Media Player to play each video file on the CD-ROM. Play each file at the beginning, middle and end.

Once you are sure that the files on the CD-ROM are OK, delete the compressed files and any remaining raw files.

#### 6.1 Creating A Jewel Case Cover

Use WordPerfect to create a Jewel Case cover. There is a standard form, JEWELBOX.FRM, stored in the D: of the general purpose PC. Bring up the form, modify it for the current CD-ROM and deposition and print it out. Save each WP file for each jewel box cover in the \LETTERS directory for the project. Instructions for cutting the form down to jewel case size are printed on the bottom of the form.

#### 7.0 Doing the Lip Synchronization

- 65 The LIPSYNC program is used to link together the video and text. It is the last step in the process of creating synchronized video and text. Prior to running the LIPSYNC program, the following steps must be complete:

Captured and compressed enough of the video to have at least one CD-ROM. You will have created AVI files called DnnSmmCM.AVI, etc.

Written the DnnSmmCM.AVI files to one or more CD-ROMs using the Corel CD Writer.

Converted the ASCII text files to a single DnnCNVT.TXT file for the entire deposition. Make sure you know the starting page number of the DnnCNVT.TXT file and the number of lines per page.

Use the LIPSYNC program to link the compressed video files on the CD-ROMs (one or more CD-ROMs) to the DnnCNVT.TXT file.

#### 7.1 Overview

The LIPSYNC process can be started before all the CD-ROMs have been created. The LIPSYNC program links frame information on the CD-ROMs with page and line number information in the converted ASCII file.

When first starting the LIPSYNC program, you have to tell the program the name of the converted ASCII file and the names of the CD-ROMs that are available. All the information is stored by LIPSYNC in a deposition file or DEP file. The DEP file contains all the LIPSYNC information. Normally you will perform lip synchronizing in several sessions as CD-ROMs become available. In the first session create the DEP file and start adding LIPSYNC information. At the end of the session, make sure you save the DEP file, since it contains all of your work to date.

To start a new session at a latter time, just load the .DEP file back into LIPSYNC and continue on, doing more of the synchronization. Be sure to save your work in the .DEP file at the end of each session so that you can start your next session at the same point you left off. The LIPSYNC program will warn you to save your work.

After all the lip synchronization is completed, create a special file called a .SYN file. The .SYN file will be IMPORTED into VIDLINK and it contains the actual sync data you created.

#### 7.2 LIPSYNC Operating Procedures

1. Start the LIPSYNC program by double clicking on the LIPSYNC icon. If you are beginning a new deposition, create the new \*.DEP file by doing a SAVE AS under the FILE menu. DEPOSITION file names have the format Dnn.DEP where nn is the deposition number.

If you are continuing your work from an earlier session, load the previously saved .DEP file using FILE/OPEN. Note: When you exit the LIPSYNC program, always store your work by doing a FILE/SAVE. You can also save your work from the Sync Video menu.

2. If a new deposition is being started, you must first load the converted ASCII file.

Click on the Transcript Information icon to enter the name of the DnnCNVT.TXT file you are going to sync to:

Use the BROWSE button to locate the file name

Set the starting page number and lines per page

Click on the "Scan File" button to scan in the file.

If the Scan File says that the number of lines per page and pages doesn't match, go back to check the original DnnORI-G.ASC file.

LIPSYNC now knows what DnnCNVT.TXT file to use and the number of lines per page and the starting page number.

Click on DONE

3. The next step is to tell LIPSYNC what video files are going to be used. The files, DnnSmmCM.AVI, etc. are on one or more CD-ROMS. If you are starting a new deposition, provide the names of the files that have already been written to CD-ROM. If you are continuing

from an earlier session, add file names to your existing list as new CD-ROMs become available.

Click on the Video Files List icon from the main LIPSYNC menu.

- 5 Enter the name of the deposition, normally the deponent's last name.

Use the Add file button to add/create the list of video files. Note: Files are always added directly below the current highlighted file. If you are adding files to the bottom of the list, make sure you first highlight the bottom file name.

- 10 Load the CD-ROM into your CD-ROM drive. In the first session, the correct CD-ROM will be CD-ROM number one. In later or continuation sessions, the CD-ROM will be the next CD-ROM compressed.

- 15 Highlight the bottom file name (if there is one) and Click on "Add File"

Use the directory and drive letter buttons to locate the file on the CD-ROM drive (normally the D: drive).

- 20 Highlight the desired file name and click on OK

Enter CD-ROM number of this CD-ROM in the field provided

Repeat the above procedure until you've added all the files for the CD-ROM.

- 25 If you have additional CD-ROMs, insert the next CD-ROM into the CD-ROM drive and add the files for that CD-ROM. Be sure to enter the correct CD-ROM number.

When you have completed adding all video files for all CD-ROMs, click on "OK" to put you back into the main menu.

- 30 4. You are now back at the main menu. Save your work by clicking on FILE and select SAVE (this assumes you've already done a SAVE AS to establish your DEP file name). Save your work as a Dnn.DEP file where nn is the deposition number.

- 35 5. You are now ready to begin synchronizing the voice to the video.

Click on Sync Video. You will see a LIPSYNC Player window and a LIPSYNC Transcript window.

- 40 The LIPSYNC Transcript window will display the first line of the transcript with the correct starting page number. For instance, 1:1 is for page one, line one. If page four is the starting page number, you should see 4:1. The first line of text is highlighted.

- 45 In the beginning of the first session, there will be no file and frame numbers on the far left side. In a continuation from a prior session, you will see the file and frame numbers entered earlier.

The LIPSYNC Player should be blank (all black) and the top of the window should say "All Files Closed".

- 50 Open one file at a time, sync the voice to the text, and then go to the next file. The list of files was created in step 3. above.

6. Procedure for each file.

- 55 If you are continuing from a previous session, locate the point in the transcript where you left off. Clip on Transcript and the Find Next Frame Gap to move you to your last sync point.

Open the list of video files by clicking on the yellow down arrow next to the "All File Closed" line. The list of files and their respective CD-ROM numbers will be shown. Select the next video file to process and make sure the correct CD-ROM is loaded. If this is the beginning, select file 1.

- 65 Once you have selected the next video file to process, the first frame of that file will appear in the video window. Sometimes the frame is blank.

## 29

Start the video by pressing <Ctrl>P or by clicking on the "Player" button in the LIPSYNC Transcript window and then click on play. The video and sound will start.

Note: CNTRL S will stop the video at any time

You can now start synchronizing by pressing ENTER to move the transcript to the next line.

NOTE: Most transcripts have a lot of text at the beginning that is not contained on the video. Press enter several times to move past such text and to find the first text that can be heard on the video.

Normally someone will swear in the witness and the text/video starts right after that point.

Also, as the deposition proceeds, there may be points where there is a lot of text that is not on the video (e.g., an off the record discussion). Again, press ENTER several times to advance the text.

When you reach the end of the video segment it will stop (freeze) and the scroll bar will be all the way to the right. At this point you should go back to the main menu and Save your work in you Dnn.DEP file. Do a SAVE command and overwrite the previous Dnn.DEP file for this deposition. Update the LIPSYNC Processing Sheet.

Go to the next video file, sync it, save and so forth until you have completed all video files.

At the end of the transcript, there will be several pages that are not on the video. You must press enter several times (using the last file and frame number of the last file) to fill in with sync information. Go all the way to the bottom of the transcript.

7. When you have processed all the files, the final step is to create the Sync file, normally a \*.SYN file. The \*.SYN file is the file that will be sent back to the client along with the \*.TXT-file and the video CD-ROMS.

## 30

From the main menu, click on Make SYN File.

The program will verify that you've done everything correctly and will tell you what to do if you have not.

As each file is processed, its length will appear in a table on screen. Fill each length in on the Quality Control Check Off Sheet (FIG. 14).

Save the \*.SYN file in a project directory. From there you can copy it to a floppy disk along with the \*.TXT file, e.g. the file area created for the project on the general purpose PC. When you save the SYN file, the SCD file is also saved.

#### 8.0 Quality Control

Detailed instructions for filling out the Quality Control Check Off Sheet (FIG. 14) appear in section 2.3.5. Note that each sheet describes only one processed deposition.

#### 9.0 The Finished Product

The diskette that accompanies the CD-ROMs contains three files. They are the converted text file and the SYN and SCD files that correspond to the video files. Note that for identification purposes, the file names on the diskette should be as close as possible to the name of the deponent (DEPONENT). For example, DEPONENT.TXT would be written for D02CNVT.TXT from the CLIENT.001 project. If the name is longer than eight characters, try to abbreviate it. Often the original ASCII file already has a name abbreviation which the client firm uses for file identification.

A diskette file called \LETTERS includes an inventory of materials.

#### 10.0 The VHS Tapes and Diskettes

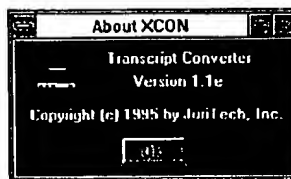
Each box of materials being returned to a client is accompanied by a return notification sheet which contains an inventory of the contents of the box. This file is also stored in \LETTERS.

## SECTION VI

PART 1.

## XCON

Form text and graphical representation files FRM



about.bmp

ABOUT.FRM - 1

VERSION 2.00

Begin Form About

```

BackColor      = &H00FF0000&
BorderStyle    = 3  'Fixed Double
Caption        = "About XCON"
ClientHeight   = 1635
ClientLeft     = 3045
ClientTop      = 3045
ClientWidth    = 3420
ControlBox     = 0   'False
Height         = 2040
Left           = 2985
LinkTopic      = "Form1"
MaxButton      = 0   'False
MinButton      = 0   'False
ScaleHeight    = 1635
ScaleWidth     = 3420
Top            = 2700
Width          = 3540

```

Begin CommandButton btnOk

```

Caption        = "Ok"
Height         = 345
Left           = 1305
TabIndex       = 2
Top            = 1155
Width          = 795

```

End

Begin Line Linel

```

BorderColor    = &H00FFFFFFF&
Index          = 3
X1             = 0
X2             = 3400
Y1             = 1620
Y2             = 1620

```

End

Begin Line Linel

```

BorderColor    = &H00FFFFFFF&
Index          = 2
X1             = 0
X2             = 3400
Y1             = 0
Y2             = 0

```

End

Begin Line Linel

```

BorderColor    = &H00FFFFFFF&
Index          = 1
X1             = 3400
X2             = 3400
Y1             = 0
Y2             = 1620

```

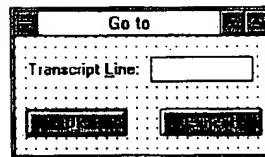


ABOUT.FRM - 2

```

End
Begin Line lbl1
  BorderColor      = &H00FFFFFF&
  Index            = 0
  X1                = 0
  X2                = 0
  Y1                = 0
  Y2                = 1620
End
Begin Label lblVersion
  Alignment         = 2 'Center
  BackColor         = &H00FF0000&
  Caption           = "Version 1.1e"
  ForeColor         = &H0000FFFF&
  Height            = 270
  Left              = 1200
  TabIndex          = 3
  Top               = 405
  Width             = 1620
End
Begin Label lblCopyright
  Alignment         = 2 'Center
  BackColor         = &H00FF0000&
  Caption           = "Copyright (c) 1995 by JuriTech, Inc."
  ForeColor         = &H0000FFFF&
  Height            = 285
  Left              = 150
  TabIndex          = 1
  Top               = 795
  Width             = 3165
End
Begin Image iconVN
  Height            = 480
  Left              = 285
  Picture           = (Icon)
  Top               = 105
  Width             = 480
End
Begin Label lblName
  Alignment         = 2 'Center
  BackColor         = &H00FF0000&
  Caption           = "Transcript Converter"
  ForeColor         = &H0000FFFF&
  Height            = 300
  Left              = 900
  TabIndex          = 0
  Top               = 135
  Width             = 2250
End
End

```



goto.bmp

GOTO.FRM - 1

VERSION 2.00

Begin Form GotoLine

```

BorderStyle = 3 'Fixed Double
Caption      = "Go to"
ClientHeight = 1395
ClientLeft   = 3615
ClientTop    = 3210
ClientWidth  = 3015
ControlBox   = 0 'False
Height       = 1800
Left         = 3555
LinkTopic    = "Form2"
MaxButton    = 0 'False
MinButton    = 0 'False
ScaleHeight  = 1395
ScaleWidth   = 3015
Top          = 2865
Width        = 3135

```

Begin CommandButton btnCancel

```

Cancel      = -1 'True
Caption     = "Cancel"
Height      = 330
Left        = 1725
TabIndex    = 3
Top         = 855
Width       = 1215

```

End

Begin CommandButton btnOk

```

Caption     = "Ok"
Default     = -1 'True
Height      = 330
Left        = 120
TabIndex    = 2
Top         = 855
Width       = 1215

```

End

Begin TextBox txtLine

```

Height      = 300
Left        = 1620
TabIndex    = 1
Top         = 240
Width       = 1215

```

End

Begin Label lblLine

```

Caption     = "Transcript &Line:"
Height      = 255
Left        = 150
TabIndex    = 0
Top         = 285
Width       = 1425

```

5,832,171

41

42

GOTO.FRM - 2

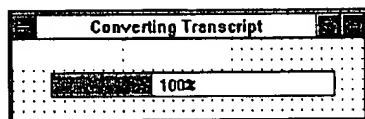
End

End

5,832,171

43

44



progress.bmp

PROGRESS.FRM - 1

VERSION 2.00

Begin Form Progress

```

BackColor      = &H00C0C000&
BorderStyle    = 1  'Fixed Single
Caption        = "Converting Transcript"
ClientHeight   = 945
ClientLeft     = 2910
ClientTop      = 2550
ClientWidth    = 4230
ControlBox     = 0  'False
Height         = 1350
Left           = 2850
LinkTopic      = "Form3"
MaxButton      = 0  'False
MinButton      = 0  'False
ScaleHeight    = 945
ScaleWidth     = 4230
Top            = 2205
Width          = 4350

```

Begin PictureBox frmProgress

```

Height         = 300
Left           = 450
ScaleHeight    = 270
ScaleWidth     = 3405
TabIndex       = 1
Top            = 390
Width          = 3435

```

Begin Label lblPercent

```

Alignment      = 2  'Center
BackStyle      = 0  'Transparent
Caption        = "100%"
Height         = 240
Left           = 1110
TabIndex       = 4
Top            = 45
Width          = 840

```

End

Begin Label lblTrack

```

BackColor      = &H000000C0&
Height         = 495
Left           = 0
TabIndex       = 3
Top            = 0
Width          = 1215

```

End

End

Begin Label Total

```

Height         = 270
Left           = 0
TabIndex       = 0

```

PROGRESS.FRM - 2

```
      Top          = 0
      Visible      = 0  'False
      Width        = 1215
End
Begin Label Current
      Height       = 270
      Left         = 1380
      TabIndex     = 2
      Top          = 0
      Visible      = 0  'False
      Width        = 1215
End
End
```

Review Options	
<b>Conversion Range</b>	
Starting Line:	<input type="text"/>
Ending Line:	<input type="text"/>
<b>Line Number Area</b>	
First Column:	<input type="text"/>
Last Column:	<input type="text"/>
<b>Text</b>	
Starting Column:	<input type="text"/>
Ending Column:	<input type="text"/>
<b>Time Code Area</b>	
First Column:	<input type="text"/>
Last Column:	<input type="text"/>
<input type="button" value="OK"/> <input type="button" value="Cancel"/>	

revopt.bmp



REVOPT.FRM - 1

VERSION 2.00

Begin Form ReviewOptions

```

BorderStyle   = 3  'Fixed Double
Caption       = "Review Options"
ClientHeight  = 5070
ClientLeft    = 3030
ClientTop     = 1500
ClientWidth   = 3885
ControlBox    = 0  'False
Height        = 5475
Left          = 2970
LinkTopic     = "Form1"
MaxButton     = 0  'False
MinButton     = 0  'False
ScaleHeight   = 5070
ScaleWidth    = 3885
Top           = 1155
Width         = 4005

```

Begin Frame frmTimeCode

```

Caption       = "Time Code Area"
Height        = 1110
Left          = 105
TabIndex      = 15
Top           = 3390
Width         = 3630

```

Begin TextBox txtTimeCodeCola

```

Height        = 315
Left          = 2010
TabIndex      = 17
Top           = 285
Width         = 1215

```

End

Begin TextBox txtTimeCodeColz

```

Height        = 315
Left          = 2010
TabIndex      = 19
Top           = 705
Width         = 1215

```

End

Begin Label lblTimeCodeCola

```

Caption       = "First Colu&mn:"
Height        = 240
Left          = 270
TabIndex      = 16
Top           = 345
Width         = 1650

```

End

Begin Label lblTimeCodeColz

```

Caption       = "Last Column:"
Height        = 240

```

REVOPT.FRM - 2

```

        Left      = 270
        TabIndex  = 18
        Top       = 750
        Width     = 1650
    End
End
Begin Frame frmText
    Caption      = "Text"
    Height       = 1050
    Left         = 90
    TabIndex     = 10
    Top          = 2310
    Width        = 3630
    Begin TextBox txtTextColz
        Height    = 315
        Left      = 2010
        TabIndex  = 14
        Top       = 630
        Width     = 1215
    End
    Begin TextBox txtTextCola
        Height    = 315
        Left      = 2010
        TabIndex  = 12
        Top       = 240
        Width     = 1215
    End
    Begin Label lblTextColz
        Caption    = "Endin&g Column:"
        Height     = 240
        Left       = 195
        TabIndex   = 13
        Top        = 660
        Width      = 1395
    End
    Begin Label lblTextCola
        Caption    = "Starting &Column:"
        Height     = 240
        Left       = 195
        TabIndex   = 11
        Top        = 270
        Width      = 1515
    End
End
Begin Frame frmLineNumberArea
    Caption      = "Line Number Area"
    Height       = 1110
    Left         = 90
    TabIndex     = 5
    Top          = 1170

```

REVOPT.FRM - 3

```

Width          = 3630
Begin TextBox txtLineNumColz
    Height      = 315
    Left        = 2010
    TabIndex    = 9
    Top         = 705
    Width       = 1215
End
Begin TextBox txtLineNumCola
    Height      = 315
    Left        = 2010
    TabIndex    = 7
    Top         = 285
    Width       = 1215
End
Begin Label lblLineNumColz
    Caption     = "&Last Column:"
    Height      = 240
    Left        = 270
    TabIndex    = 8
    Top         = 750
    Width       = 1650
End
Begin Label lblLineNumCola
    Caption     = "&First Column:"
    Height      = 240
    Left        = 270
    TabIndex    = 6
    Top         = 345
    Width       = 1650
End
End
Begin Frame frmConvRange
    Caption     = "Conversion Range"
    Height      = 1125
    Left        = 90
    TabIndex    = 0
    Top         = 15
    Width       = 3615
Begin TextBox txtEndLine
    Height      = 315
    Left        = 2010
    TabIndex    = 4
    Top         = 690
    Width       = 1215
End
Begin TextBox txtStartLine
    Height      = 315
    Left        = 2010
    TabIndex    = 2

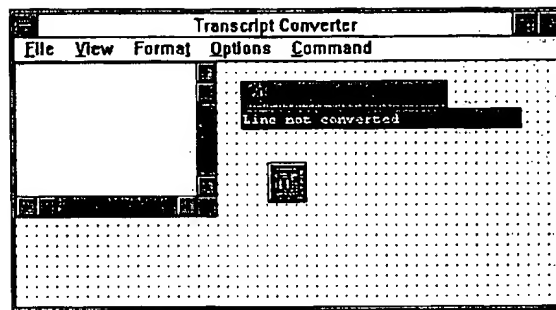
```

REVOPT.FRM - 4

```

        Top          = 270
        Width        = 1215
    End
    Begin Label lblEndLine
        Caption       = "&Ending Line:"
        Height        = 240
        Left          = 270
        TabIndex      = 3
        Top           = 750
        Width         = 1650
    End
    Begin Label lblStartLine
        Caption       = "&Starting Line:"
        Height        = 240
        Left          = 270
        TabIndex      = 1
        Top           = 330
        Width         = 1650
    End
End
Begin CommandButton btnCancel
    Cancel           = -1 'True
    Caption          = "Cancel"
    Height           = 330
    Left             = 2160
    TabIndex         = 21
    Top              = 4665
    Width            = 1215
End
Begin CommandButton btnOk
    Caption          = "Ok"
    Default          = -1 'True
    Height           = 330
    Left             = 555
    TabIndex         = 20
    Top              = 4665
    Width            = 1215
End
End

```



xcon.bmp

XCON.FRM - 1

VERSION 2.00

Begin Form Xcon

```

Caption      = "Transcript Converter"
ClientHeight = 2880
ClientLeft   = 1260
ClientTop    = 2565
ClientWidth  = 6525
Height       = 3570
Icon         = (Icon)
Left         = 1200
LinkTopic    = "Form1"
ScaleHeight  = 2880
ScaleWidth   = 6525
Top          = 1935
Width        = 6645

```

Begin PictureBox Toolbar

```

BackColor    = &H00C0C0C0&
Height       = 330
Left         = 2700
ScaleHeight  = 300
ScaleWidth   = 2460
TabIndex     = 1
Top          = 225
Width        = 2490

```

Begin Label lblSel

```

BackColor    = &H00C0C0C0&
Caption      = "1/1"
FontBold     = 0 'False
FontItalic   = 0 'False
FontName     = "MS Sans Serif"
FontSize     = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height       = 225
Left         = 45
TabIndex     = 2
Top          = 30
Width        = 2220

```

End

End

Begin CommonDialog Cdlg

```

Left         = 3015
Top          = 1185

```

End

Begin Editor Transcript

```

BottomMargin = 0
CaretHeight  = -1
CaretWidth   = -1
FileConvertOemAnsi= 0 'False
FileOpen     = ""

```

XCON.FRM - 2

```

FileSaveAppend = 0 'False
FontBold       = 0 'False
FontItalic     = 0 'False
FontName       = "Courier New"
FontSize       = 8.25
FontStrikethru = 0 'False
FontUnderline  = 0 'False
Height         = 1830
InsertMode     = -1 'True
Left           = 0
LeftMargin     = 0
Password       = 22886
ReadOnly       = -1 'True
RightMargin    = 0
ScrollBars     = 3 'Both
SearchCaseSensitive = 0 'False
SearchOrigin   = 0 'From Cursor
SearchReplacement = ""
SearchTarget   = ""
SearchTo       = 1 'Bottom of text
Prop82         = 0 'False
SelBackColor   = &H00000000&
SelDefaultType = 1 'Stream
SelDragDropEnable = -1 'True
SelForeColor   = &H00FFFFFF&
TabDefaultWidth = -1
TabIndex       = 0
Top            = 0
TopMargin      = 0
UndoLimit      = 255
Width          = 2400
WrapAutomatically = 0 'False
WrapWholeWords = -1 'True
WrapX          = -1
End
Begin Label txtPreview
  BackColor     = &H00400000&
  BorderStyle   = 1 'Fixed Single
  Caption       = "Line not converted"
  FontBold      = 0 'False
  FontItalic    = 0 'False
  FontName      = "Courier New"
  FontSize      = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  ForeColor     = &H00FFFFFF&
  Height        = 240
  Left          = 2700
  TabIndex      = 3
  Top           = 555

```

XCON.FRM - 3

```

        Width          = 3360
    End
    Begin Menu IDM_FILE
        Caption          = "&File"
        Begin Menu IDM_FILE_NEW
            Caption       = "&New"
        End
        Begin Menu IDM_FILE_OPENTRSCRIPT
            Caption       = "&Open Transcript..."
        End
        Begin Menu IDM_FILE_INSERT
            Caption       = "&Insert Transcript..."
        End
        Begin Menu IDM_FILE_SEP1
            Caption       = "-"
        End
        Begin Menu IDM_FILE_CONVERT
            Caption       = "&Convert..."
        End
        Begin Menu IDM_FILE_SAVEAS
            Caption       = "&Save As..."
        End
        Begin Menu IDM_FILE_SEP2
            Caption       = "-"
        End
        Begin Menu IDM_FILE_ABOUT
            Caption       = "A&bout..."
        End
        Begin Menu IDM_FILE_EXIT
            Caption       = "E&xit"
        End
    End
    Begin Menu IDM_VIEW
        Caption          = "&View"
        Begin Menu IDM_VIEW_GOTOLINE
            Caption       = "&Go to Document Line..."
        End
        Begin Menu IDM_VIEW_SEP2
            Caption       = "-"
        End
        Begin Menu IDM_VIEW_READONLY
            Caption       = "Transcript &Read-only"
            Checked       = -1 'True'
        End
    End
    Begin Menu IDM_FORMAT
        Caption          = "Forma&t"
        Begin Menu IDM_FORMAT_NORMAL
            Caption       = "&Normal"
            Checked       = -1 'True'
        End
    End

```



XCON.FRM - 4

```

End
Begin Menu IDM_FORMAT_UNDERSCORE
  Caption      = "&Underscore/Hard CR"
End
Begin Menu IDM_FORMAT_SEP
  Caption      = "-"
End
Begin Menu IDM_FORMAT_UNDERSCORECOLUMN
  Caption      = "Set Underscore &Column"
  Enabled      = 0  'False
End
End
Begin Menu IDM_OPTIONS
  Caption      = "&Options"
  Begin Menu IDM_OPTIONS_IGNOREPRETEXT
    Caption    = "&Ignore Pre-Text Non-Line Area"
  End
End
Begin Menu IDM_COMMAND
  Caption      = "&Command"
  Begin Menu IDM_OPTIONS_STARTINGLINE
    Caption    = "Set &Starting Line"
  End
  Begin Menu IDM_OPTIONS_ENDINGLINE
    Caption    = "Set &Ending Line"
  End
  Begin Menu IDM_OPTIONS_SEP1
    Caption    = "-"
  End
  Begin Menu IDM_OPTIONS_LINENUMBERAREA
    Caption    = "Set &Line Number Area"
  End
  Begin Menu IDM_OPTIONS_TEXTCOLUMNA
    Caption    = "Set Starting &Text Column"
  End
  Begin Menu IDM_OPTIONS_TEXTCOLUMNZ
    Caption    = "Set Ending Te&xt Column"
  End
  Begin Menu IDM_OPTIONS_TIMECODEAREA
    Caption    = "Set Time &Code Area"
  End
  Begin Menu IDM_OPTIONS_SEP2
    Caption    = "-"
  End
  Begin Menu IDM_OPTIONS_REVIEW
    Caption    = "&Review..."
  End
End
End
End

```

## Files from XCON.ZIP (text converter):

				# of files:	Pages of Form Text:	Pages of Source Code:
MISC	BAS	607	11-09-95 3:43p		-	1
XCON	BAS	7,087	01-30-96 11:23p	2	-	7
ABOUT	FRM	1,842	01-30-96 11:24p		2	1
GOTO	FRM	1,045	11-13-95 1:43p		2	1
PROGRESS	FRM	1,141	11-10-95 2:54p		2	1
REVOPT	FRM	5,785	01-06-96 2:11p		4	5
XCON	FRM	11,683	01-30-96 11:21p	5	4	7
XCON	MAK	249	01-30-96 11:24p	1		
TEST	TXT	0	01-06-96 2:30p	1		
11 file(s)		29,439 bytes				

PART 2.

## VIDLINK

Form text and graphical representation files FRM

The screenshot shows a window titled "VN Time" with a standard Windows-style title bar. The window is divided into four main sections:

- Global Time:** Contains three input fields labeled "Total Time:", "Current Time:", and "Last Frame:". To the right of these is a section labeled "Deck Start Time:" with a single input field labeled "lstDeckGlobalStart".
- Local Time:** Contains three input fields labeled "lstDecks" (with a small icon to its right), "Frame Time:", and "Length:". The "lstDecks" field has the number "2" entered.
- Convert:** Contains two input fields labeled "lstConversions" (with a small icon to its right) and "Result:". The "lstConversions" field has the number "2" entered.
- From:** A label positioned between the "Convert" section and the "Result:" field, with an input field below it.

The interface is simple and functional, using standard Windows controls like text boxes and labels.

\_vntime.bmp

\_VNTime.FRM - 1

VERSION 2.00

Begin Form VNTime

```

BorderStyle = 1 'Fixed Single
Caption      = "VN Time"
ClientHeight = 3810
ClientLeft   = 1095
ClientTop    = 1485
ClientWidth  = 5565
ControlBox   = 0 'False
Height       = 4215
Icon         = (Icon)
Left         = 1035
LinkTopic    = "Form1"
MaxButton    = 0 'False
ScaleHeight  = 3810
ScaleWidth   = 5565
Top          = 1140
Width        = 5685

```

Begin Frame frmConvert

```

Caption      = "Convert"
Height       = 2040
Left         = 2730
TabIndex     = 21
Top          = 1650
Width        = 2685

```

Begin CommandButton btnConvert

```

Caption      = "Convert"
Height       = 345
Left         = 105
TabIndex     = 0
Top          = 1095
Width        = 2460

```

End

Begin ComboBox lstConversions

```

FontBold     = 0 'False
FontItalic   = 0 'False
FontName     = "MS Sans Serif"
FontSize     = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height       = 300
Left         = 90
Style        = 2 'Dropdown List
TabIndex     = 15

```

```

Top          = 285
Width        = 2520

```

End

Begin Label lblFrom

```

BorderStyle = 1 'Fixed Single

```

\_VNTIME.FRM - 2

```

        FontBold      = 0   'False
        FontItalic    = 0   'False
        FontName      = "MS Sans Serif"
        FontSize      = 8.25
        FontStrikethru = 0   'False
        FontUnderline  = 0   'False
        Height        = 300
        Left           = 750
        TabIndex       = 1
        Top            = 690
        Width          = 1800
    End
    Begin Label Label10
        Caption        = "From:"
        Height          = 330
        Left            = 90
        TabIndex        = 17
        Top             = 705
        Width           = 630
    End
    Begin Label lblResult
        BorderStyle     = 1   'Fixed Single
        FontBold         = 0   'False
        FontItalic       = 0   'False
        FontName         = "MS Sans Serif"
        FontSize         = 8.25
        FontStrikethru   = 0   'False
        FontUnderline    = 0   'False
        Height           = 300
        Left             = 765
        TabIndex         = 18
        Top              = 1560
        Width            = 1800
    End
    Begin Label Label8
        Caption          = "Result:"
        Height            = 330
        Left              = 105
        TabIndex          = 16
        Top               = 1575
        Width             = 630
    End
End
Begin Frame frmLocalTime
    Caption            = "Local Time"
    Height              = 2025
    Left                = 135
    TabIndex            = 11
    Top                 = 1665
    Width               = 2505

```

\_VNTIME.FRM - 3

```

Begin ComboBox lstDecks
    Height      = 300
    Left        = 195
    Style        = 2 'Dropdown List
    TabIndex     = 12

    Top         = 300
    Width        = 2100
End
Begin Label lblDeckEnd
    BorderStyle  = 1 'Fixed Single
    FontBold     = 0 'False
    FontItalic   = 0 'False
    FontName     = "MS Sans Serif"
    FontSize     = 8.25
    FontStrikethru = 0 'False
    FontUnderline = 0 'False
    Height       = 525
    Left         = 870
    TabIndex     = 20
    Top          = 1200
    Width        = 1530
End
Begin Label Label7
    Caption      = "Length:"
    Height       = 330
    Left         = 105
    TabIndex     = 19
    Top          = 1245
    Width        = 720
End
Begin Label lblFrameTime
    BorderStyle  = 1 'Fixed Single
    FontBold     = 0 'False
    FontItalic   = 0 'False
    FontName     = "MS Sans Serif"
    FontSize     = 8.25
    FontStrikethru = 0 'False
    FontUnderline = 0 'False
    Height       = 300
    Left         = 1275
    TabIndex     = 14
    Top          = 705
    Width        = 1005
End
Begin Label Label5
    Caption      = "Frame Time:"
    Height       = 330
    Left         = 150
    TabIndex     = 13

```

\_VNTIME.FRM - 4

```

        Top          = 720
        Width        = 1170
    End
End
Begin Frame frmGlobalTime
    Caption          = "Global Time"
    Height           = 1425
    Left             = 90
    TabIndex         = 2
    Top             = 105
    Width            = 5370
    Begin ListBox lstDeckGlobalStart
        FontBold      = 0 'False
        FontItalic     = 0 'False
        FontName       = "MS Sans Serif"
        FontSize       = 8.25
        FontStrikethru = 0 'False
        FontUnderline  = 0 'False
        Height         = 810
        Left           = 3180
        TabIndex       = 7
        Top            = 540
        Width           = 2085
    End
    Begin Label Label4
        Caption        = "Deck Start Time:"
        Height         = 285
        Left           = 3225
        TabIndex       = 10
        Top            = 195
        Width           = 1560
    End
    Begin Label lblLastFrame
        BorderStyle    = 1 'Fixed Single
        FontBold        = 0 'False
        FontItalic      = 0 'False
        FontName        = "MS Sans Serif"
        FontSize        = 8.25
        FontStrikethru  = 0 'False
        FontUnderline   = 0 'False
        Height          = 300
        Left            = 1485
        TabIndex        = 9
        Top             = 1050
        Width           = 1515
    End
    Begin Label Label3
        Caption        = "Last Frame:"
        Height         = 285
        Left           = 135

```

\_VNTIME.FRM - 5

```

        TabIndex      = 8
        Top            = 1050
        Width          = 1185
    End
    Begin Label lblCurrentTime
        BorderStyle    = 1 'Fixed Single
        FontBold        = 0 'False
        FontItalic      = 0 'False
        FontName        = "MS Sans Serif"
        FontSize        = 8.25
        FontStrikethru   = 0 'False
        FontUnderline   = 0 'False
        Height          = 300
        Left            = 1485
        TabIndex        = 6
        Top             = 690
        Width           = 1515
    End
    Begin Label Label2
        Caption         = "Current Time:"
        Height          = 270
        Left            = 120
        TabIndex        = 5
        Top             = 735
        Width           = 1305
    End
    Begin Label lblTotalTime
        BorderStyle    = 1 'Fixed Single
        FontBold        = 0 'False
        FontItalic      = 0 'False
        FontName        = "MS Sans Serif"
        FontSize        = 8.25
        FontStrikethru   = 0 'False
        FontUnderline   = 0 'False
        Height          = 300
        Left            = 1485
        TabIndex        = 4
        Top             = 315
        Width           = 1515
    End
    Begin Label Label1
        Caption         = "Total Time:"
        Height          = 255
        Left            = 120
        TabIndex        = 3
        Top             = 360
        Width           = 1155
    End
End
End
End

```





blackout.bmp

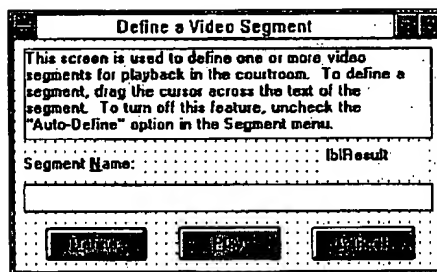
BLACKOUT.FRM - 1

VERSION 2.00

Begin Form Blackout

BackColor	=	&H00000000&
BorderStyle	=	0 'None
Caption	=	"Blackout"
ClientHeight	=	1200
ClientLeft	=	1095
ClientTop	=	1485
ClientWidth	=	2160
Height	=	1605
Left	=	1035
LinkTopic	=	"Form1"
ScaleHeight	=	1200
ScaleWidth	=	2160
Top	=	1140
Width	=	2280

End



defseg.bmp

DEFSEG.FRM - 1

VERSION 2.00

Begin Form DefineSegment

```

BorderStyle   = 3 'Fixed Double
Caption       = "Define a Video Segment"
ClientHeight  = 2730
ClientLeft    = 2265
ClientTop     = 1995
ClientWidth   = 5085
ControlBox    = 0 'False
Height        = 3135
Left          = 2205
LinkTopic     = "Form1"
MaxButton     = 0 'False
MinButton     = 0 'False
ScaleHeight   = 2730
ScaleWidth    = 5085
Top           = 1650
Width         = 5205

```

Begin CommandButton btnPlay

```

Caption       = "&Play"
Height        = 390
Left          = 1950
TabIndex      = 3
Top           = 2220
Width         = 1215

```

End

Begin CommandButton btnCancel

```

Cancel        = -1 'True
Caption       = "Cancel"
Height        = 390
Left          = 3540
TabIndex      = 4
Top           = 2220
Width         = 1215

```

End

Begin CommandButton btnDefine

```

Caption       = "&Define"
Default       = -1 'True
Height        = 390
Left          = 360
TabIndex      = 2
Top           = 2220
Width         = 1215

```

End

Begin TextBox txtSegmentName

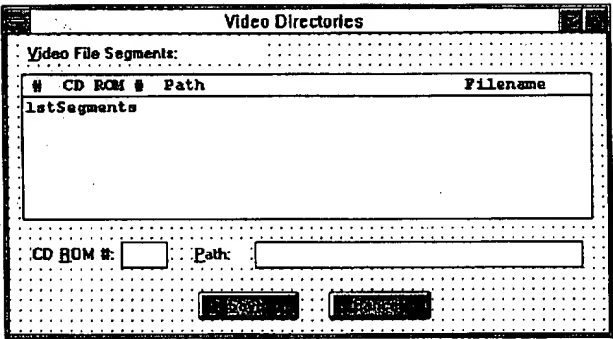
```

Height        = 330
Left          = 105
TabIndex      = 1
Top           = 1710
Width         = 4860

```

DEFSEG.FRM - 2

```
End
Begin Label lblInfo
  BorderStyle   = 1 'Fixed Single
  Caption       = "This screen is used to define one or more video segme
  Height        = 1080
  Left          = 120
  TabIndex      = 6
  Top           = 105
  Width         = 4845
End
Begin Label lblResult
  Caption       = "lblResult"
  Height        = 300
  Left          = 3705
  TabIndex      = 5
  Top           = 1275
  Visible       = 0 'False
  Width         = 1215
End
Begin Label lblSegmentName
  Caption       = "Segment &Name:"
  Height        = 315
  Left          = 105
  TabIndex      = 0
  Top           = 1365
  Width         = 1440
End
End
```



fileopts.bmp

FILEOPTS.FRM - 1

VERSION 2.00

Begin Form FileOptions

```

BorderStyle   = 3  'Fixed Double
Caption       = "Video Directories"
ClientHeight  = 3525
ClientLeft    = 1335
ClientTop     = 1935
ClientWidth   = 7140
ControlBox    = 0  'False
Height        = 3930
Left          = 1275
LinkTopic     = "Form1"
MaxButton     = 0  'False
ScaleHeight   = 3525
ScaleWidth    = 7140
Top           = 1590
Width         = 7260

```

Begin CommandButton btnCancel

```

Cancel        = -1 'True
Caption       = "Cancel"
Height        = 330
Left          = 3810
TabIndex      = 8
Top           = 3030
Width         = 1215

```

End

Begin CommandButton btnSave

```

Caption       = "&Save"
Height        = 330
Left          = 2235
TabIndex      = 7
Top           = 3030
Width         = 1215

```

End

Begin TextBox txtPath

```

Height        = 315
Left          = 2925
TabIndex      = 6
Top           = 2445
Width         = 3915

```

End

Begin TextBox txtGroup

```

Height        = 315
Left          = 1320
TabIndex      = 4
Top           = 2445
Width         = 555

```

End

Begin ListBox lstSegments

```

FontBold      = -1 'True

```

FILEOPTS.FRM - 2

```

        FontItalic      = 0   'False
        FontName        = "Courier New"
        FontSize        = 9.75
        FontStrikethru   = 0   'False
        FontUnderline    = 0   'False
        Height          = 1470
        Left            = 165
        TabIndex        = 2
        Top             = 720
        Width           = 6795
    End
Begin Label lblPath
    Caption      = "&Path:"
    Height       = 255
    Left        = 2190
    TabIndex    = 5
    Top         = 2490
    Width       = 600
End
Begin Label lblGroup
    Caption      = "CD &ROM #:"
    Height       = 255
    Left        = 270
    TabIndex    = 3
    Top         = 2490
    Width       = 1065
End
Begin Label lblSegList
    BorderStyle  = 1   'Fixed Single
    Caption      = " # CD ROM # Path"
    FontBold     = -1  'True
    FontItalic   = 0   'False
    FontName     = "Courier New"
    FontSize     = 9.75
    FontStrikethru = 0   'False
    FontUnderline = 0   'False
    Height       = 270
    Left        = 165
    TabIndex    = 1
    Top         = 465
    Width       = 6795
End
Begin Label lblSegments
    Caption      = "&Video File Segments:"
    Height       = 225
    Left        = 240
    TabIndex    = 0
    Top         = 120
    Width       = 2880
End

```

Filename"



5,832,171

99

100

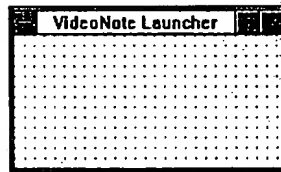
FILEOPTS.FRM - 3

End

101

5,832,171

102



launcher.bmp

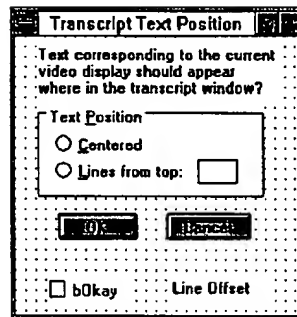
LAUNCHER.FRM - 1

VERSION 2.00

Begin Form Launcher

Caption	=	"VideoNote Launcher"
ClientHeight	=	1560
ClientLeft	=	2715
ClientTop	=	2910
ClientWidth	=	3210
Height	=	1965
Left	=	2655
LinkTopic	=	"Form1"
ScaleHeight	=	1560
ScaleWidth	=	3210
Top	=	2565
Width	=	3330

End



lineoff.bmp

LINEOFF.FRM - 1

VERSION 2.00

Begin Form LineOffsetDlg

```

BorderStyle   = 3  'Fixed Double
Caption       = "Transcript Text Position"
ClientHeight  = 2550
ClientLeft    = 2760
ClientTop     = 2760
ClientWidth   = 3300
ControlBox    = 0  'False
Height        = 2955
Left          = 2700
LinkTopic     = "Form1"
MaxButton     = 0  'False
MinButton     = 0  'False
ScaleHeight   = 2550
ScaleWidth    = 3300
Top           = 2415
Width         = 3420

```

Begin Frame Position

```

Caption       = "Text &Position"
Height        = 1100
Left          = 270
TabIndex      = 1
Top           = 810
Width         = 2715

```

Begin OptionButton btnPosition

```

Caption       = "&Lines from top:"
Height        = 270
Index         = 1
Left          = 210
TabIndex      = 3
Top           = 650
Width         = 1650

```

End

Begin OptionButton btnPosition

```

Caption       = "&Centered"
Height        = 270
Index         = 0
Left          = 210
TabIndex      = 2
Top           = 330
Width         = 1185

```

End

Begin TextBox txtLineOffset

```

Height        = 285
Left          = 1920
TabIndex      = 4
Top           = 645
Width         = 480

```

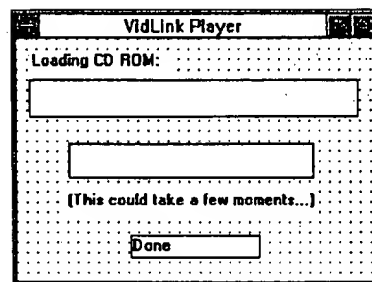
End

LINEOFF.FRM - 2

```

End
Begin CheckBox bOkay
    Caption      = "bOkay"
    Height       = 270
    Left         = 405
    TabIndex     = 7
    TabStop      = 0 'False
    Top          = 2865
    Visible      = 0 'False
    Width        = 1020
End
Begin CommandButton btnCancel
    Cancel       = -1 'True
    Caption      = "Cancel"
    Height       = 315
    Left         = 1815
    TabIndex     = 6
    Top          = 2100
    Width        = 1020
End
Begin CommandButton btnOK
    Caption      = "OK"
    Default      = -1 'True
    Height       = 315
    Left         = 510
    TabIndex     = 5
    Top          = 2100
    Width        = 960
End
Begin Label lblLineOffset
    Caption      = "Line Offset"
    Height       = 285
    Left         = 1875
    TabIndex     = 8
    Top          = 2880
    Visible      = 0 'False
    Width        = 1200
End
Begin Label lblInstructions
    Caption      = "Text corresponding to the current video display shoul
    Height       = 675
    Left         = 270
    TabIndex     = 0
    Top          = 120
    Width        = 2865
End
End

```



loading.bmp

LOADING.FRM - 1

VERSION 2.00

Begin Form LoadingMsg

```

BorderStyle = 1 'Fixed Single
Caption      = "VidLink Player"
ClientHeight = 2085
ClientLeft   = 2580
ClientTop    = 3720
ClientWidth  = 4215
ControlBox   = 0 'False
Height       = 2490
Left         = 2520
LinkTopic    = "Form2"
MaxButton    = 0 'False
MinButton    = 0 'False
ScaleHeight  = 2085
ScaleWidth   = 4215
Top          = 3375
Width        = 4335

```

Begin PictureBox tTotal

```

Height = 420
Left    = 615
ScaleHeight = 390
ScaleWidth  = 2895
TabIndex   = 0
Top        = 1230
Width      = 2925

```

Begin Shape tDone

```

BackColor = &H00FF0000&
BackStyle = 1 'Opaque
BorderColor = &H00FF0000&
BorderStyle = 0 'Transparent
Height      = 405
Left        = 0
Top         = 0
Width       = 15

```

End

End

Begin Label lblDone

```

BorderStyle = 1 'Fixed Single
Caption      = "Done"
Height       = 270
Left         = 1350
TabIndex    = 1
Top          = 2325
Width        = 1545

```

End

Begin Label lblPleaseInsert

```

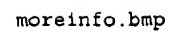
Caption      = "Loading CD ROM:"
Height       = 315
Left         = 180

```



LOADING.FRM - 2

```
        TabIndex      = 2
        Top            = 150
        Width          = 1680
    End
    Begin Label lblMediaLabel
        Alignment       = 2 'Center
        BorderStyle     = 1 'Fixed Single
        Height          = 450
        Left            = 150
        TabIndex        = 3
        Top             = 480
        Width           = 3915
    End
    Begin Label Label4
        Caption         = "(This could take a few moments...)"
        Height          = 270
        Left            = 600
        TabIndex        = 4
        Top             = 1800
        Width           = 2985
    End
End
```



MOREINFO.FRM - 1

VERSION 2.00

Begin Form MoreInfo

```

BackColor      = &H00C0C0C0&
BorderStyle    = 1 'Fixed Single
Caption        = "Order Information"
ClientHeight   = 3105
ClientLeft     = 750
ClientTop      = 1620
ClientWidth    = 4740
Height         = 3510
Left           = 690
LinkTopic      = "Form1"
MaxButton      = 0 'False
MinButton      = 0 'False
ScaleHeight    = 3105
ScaleWidth     = 4740
Top            = 1275
Width          = 4860

```

Begin SSPanel lblJuriTech

```

BackColor      = &H00C0C0C0&
BevelWidth     = 3
Caption        = "JuriTech"
Font3D         = 0 'None
Height         = 1200
Left           = 345
TabIndex       = 2
Top            = 1110
Width          = 3975

```

End

Begin SSCommand btnOk

```

Caption        = "Ok"
Font3D         = 0 'None
Height         = 360
Left           = 1800
Picture        = (none)
TabIndex       = 1
Top            = 2520
Width          = 1215

```

End

Begin SSPanel Panel3D1

```

BackColor      = &H00C0C0C0&
BevelWidth     = 3
Caption        = "For information on converting your VHS tapes and ASCII"
Font3D         = 0 'None
Height         = 750
Left           = 345
TabIndex       = 0
Top            = 240
Width          = 3975

```

End

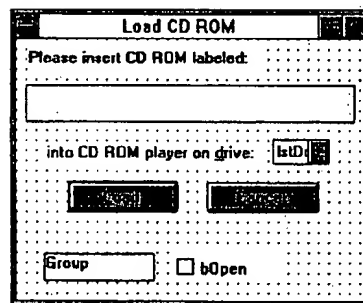
121

5,832,171

122

MOREINFO.FRM - 2

End



mounter.bmp

MOUNTER.FRM - 1

VERSION 2.00

Begin Form Mounter

```

BorderStyle = 3 'Fixed Double
Caption      = "Load CD ROM"
ClientHeight = 2220
ClientLeft   = 2505
ClientTop    = 3075
ClientWidth  = 4170
ControlBox   = 0 'False
Height       = 2625
Left         = 2445
LinkTopic    = "Form1"
MaxButton    = 0 'False
MinButton    = 0 'False
ScaleHeight  = 2220
ScaleWidth   = 4170
Top          = 2730
Width        = 4290

```

Begin ComboBox lstDrive

```

Height = 300
Left   = 3060
Style  = 2 'Dropdown List
TabIndex = 7

```

```

Top      = 1185
Width    = 675

```

End

Begin CheckBox bOpen

```

Caption = "bOpen"
Height  = 375
Left    = 1920
TabIndex = 5
Top     = 2505
Visible = 0 'False
Width   = 1215

```

End

Begin CommandButton btnCancel

```

Cancel = -1 'True
Caption = "Cancel"
Height  = 360
Left    = 2280
TabIndex = 4
Top     = 1695
Width   = 1335

```

End

Begin CommandButton btnOpen

```

Caption = "&Load"
Default = -1 'True
Height  = 375
Left    = 615

```

MOUNTER.FRM - 2

```

        TabIndex      = 3
        Top            = 1680
        Width          = 1320
    End
    Begin Label lblGroup
        BorderStyle    = 1 'Fixed Single
        Caption         = "Group"
        Height          = 330
        Left            = 330
        TabIndex        = 6
        Top             = 2535
        Visible         = 0 'False
        Width           = 1320
    End
    Begin Label lblDrive
        Caption         = "into CD ROM player on &drive:"
        Height          = 270
        Left            = 360
        TabIndex        = 2
        Top             = 1245
        Width           = 2565
    End
    Begin Label lblMediaLabel
        Alignment       = 2 'Center
        BorderStyle     = 1 'Fixed Single
        Height          = 450
        Left            = 120
        TabIndex        = 1
        Top             = 540
        Width           = 3915
    End
    Begin Label lblPleaseInsert
        Caption         = "Please insert CD ROM labeled:"
        Height          = 315
        Left            = 150
        TabIndex        = 0
        Top             = 120
        Width           = 2790
    End
End

```

**Scroll Options**

Set the size of the steps for the scroll bar.  
Measurements may be in seconds, or as a  
percentage of the total size of the video file.

**Small Steps (Click Scroll Arrow)**

☐ Seconds (00h 00m 00s)  
☐ Percent (00h 00m 00s)

**Large Steps (Click Scroll Elevator Shaft)**

☐ Seconds (00h 00m 00s)  
☐ Percent (00h 00m 00s)

**Current Video Length:** 00h 00m 00s

**File Length:** 00h 00m 00s

☐ End Okay

☐ LargeChange  
☐ SmallChange

scrllopt.bmp



SCRLLOPT.FRM - 1

VERSION 2.00

Begin Form StepSizeDlg

```

BorderStyle = 3 'Fixed Double
Caption      = "Scroll Options"
ClientHeight = 3165
ClientLeft   = 1950
ClientTop    = 2385
ClientWidth  = 5400
ControlBox   = 0 'False
Height       = 3570
Left         = 1890
LinkTopic    = "Form3"
MaxButton    = 0 'False
MinButton    = 0 'False
ScaleHeight  = 3165
ScaleWidth   = 5400
Top          = 2040
Width        = 5520

```

Begin CommandButton btnCancel

```

Cancel      = -1 'True
Caption     = "Cancel"
Height      = 300
Left        = 4095
TabIndex    = 16
Top         = 2670
Width       = 1095

```

End

Begin CommandButton btnOk

```

Caption     = "OK"
Default     = -1 'True
Height      = 300
Left        = 4095
TabIndex    = 15
Top         = 2190
Width       = 1095

```

End

Begin CheckBox bEndOk

```

Caption     = "End Okay"
Height      = 345
Left        = 2085
TabIndex    = 17
Top         = 4035
Visible     = 0 'False
Width       = 1140

```

End

Begin Frame SmallSteps

```

Caption     = "&Small Steps (Click Scroll Arrow)"
Height      = 1005
Left        = 150
TabIndex    = 3

```

SCRLLOPT.FRM - 2

```

Top          = 300
Width        = 3700
Begin OptionButton nSmallUnits
  Caption     = "&Percent"
  Height      = 255
  Index       = 1
  Left        = 915
  TabIndex    = 7
  Top         = 610
  Width       = 1065
End
Begin OptionButton nSmallUnits
  Caption     = "Se&conds"
  Height      = 255
  Index       = 0
  Left        = 915
  TabIndex    = 5
  Top         = 310
  Width       = 1065
End
Begin TextBox SmallSize
  Height      = 300
  Left        = 195
  TabIndex    = 4
  Top         = 420
  Width       = 495
End
Begin Label tSmallPercent
  Caption     = "(00h 00m 00s)"
  Height      = 210
  Left        = 2175
  TabIndex    = 8
  Top         = 650
  Width       = 1275
End
Begin Label tSmallSeconds
  Caption     = "(00h 00m 00s)"
  Height      = 210
  Left        = 2175
  TabIndex    = 6
  Top         = 345
  Width       = 1275
End
End
Begin Frame LargeSteps
  Caption     = "&Large Steps (Click Scroll Elevator Shaft)"
  Height      = 1005
  Left        = 150
  TabIndex    = 9
  Top         = 2040

```

SCRLLOPT.FRM - 3

```

Width          = 3700
Begin TextBox LargeSize
    Height      = 300
    Left        = 195
    TabIndex    = 10
    Top         = 420
    Width       = 495
End
Begin OptionButton nLargeUnits
    Caption     = "Se&conds"
    Height      = 225
    Index       = 0
    Left        = 915
    TabIndex    = 11
    Top         = 310
    Width       = 1215
End
Begin OptionButton nLargeUnits
    Caption     = "&Percent"
    Height      = 240
    Index       = 1
    Left        = 915
    TabIndex    = 13
    Top         = 610
    Width       = 1095
End
Begin Label tLargePercent
    Caption     = "(00h 00m 00s)"
    Height      = 210
    Left        = 2175
    TabIndex    = 14
    Top         = 640
    Width       = 1275
End
Begin Label tLargeSeconds
    Caption     = "(00h 00m 00s)"
    Height      = 255
    Left        = 2175
    TabIndex    = 12
    Top         = 345
    Width       = 1245
End
End
Begin Label lblLargeChange
    BorderStyle = 1 'Fixed Single
    Caption     = "lblLargeChange"
    Height      = 300
    Left        = 270
    TabIndex    = 19
    Top         = 3690

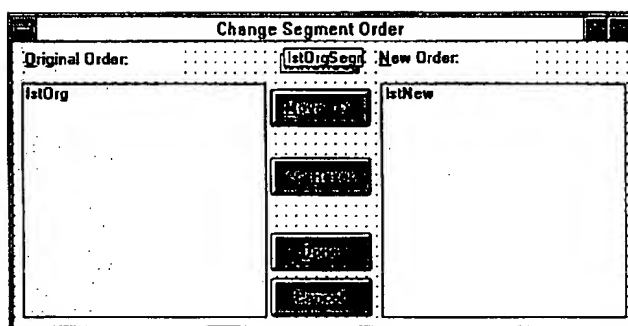
```

SCRLLOPT.FRM - 4

```

        Width          = 1530
    End
    Begin Label lblSmallChange
        BorderStyle     = 1 'Fixed Single
        Caption         = "lblSmallChange"
        Height          = 300
        Left            = 270
        TabIndex        = 18
        Top             = 4020
        Width           = 1530
    End
    Begin Label FileLength
        BorderStyle     = 1 'Fixed Single
        Caption         = "File Length"
        Height          = 300
        Left            = 2145
        TabIndex        = 20
        Top             = 3780
        Width           = 1095
    End
    Begin Label tVideoFile
        BorderStyle     = 1 'Fixed Single
        Caption         = "00h 00m 00s"
        Height          = 255
        Left            = 4005
        TabIndex        = 2
        Top             = 1575
        Width           = 1245
    End
    Begin Label lblVideoLength
        Caption         = "Current Video Length:"
        Height          = 480
        Left            = 4005
        TabIndex        = 1
        Top             = 1050
        Width           = 1230
    End
    Begin Label lblInstructions
        Alignment       = 2 'Center
        BorderStyle     = 1 'Fixed Single
        Caption         = "Set the size of the steps for the scroll bar. Measure
        Height          = 705
        Left            = 555
        TabIndex        = 0
        Top             = 120
        Width           = 4320
    End
End
End

```



segorder.bmp

SEGORDER.FRM - 1

VERSION 2.00

Begin Form SegReorder

```

BorderStyle   = 3  'Fixed Double
Caption       = "Change Segment Order"
ClientHeight  = 3360
ClientLeft    = 1095
ClientTop     = 1485
ClientWidth   = 7365
ControlBox    = 0  'False
Height        = 3765
Left          = 1035
LinkTopic     = "Form1"
MaxButton     = 0  'False
MinButton     = 0  'False
ScaleHeight   = 3360
ScaleWidth    = 7365
Top           = 1140
Width         = 7485

```

Begin ListBox lstNew

```

Height        = 2760
Left          = 4395
TabIndex      = 9
Top           = 495
Width         = 2910

```

End

Begin ListBox lstOrgSegments

```

Height        = 225
Left          = 3225
TabIndex      = 8
Top           = 75
Visible       = 0  'False
Width         = 960

```

End

Begin ListBox lstNewSegments

```

Height        = 225
Left          = 3180
TabIndex      = 7
Top           = 150
Visible       = 0  'False
Width         = 960

```

End

Begin CommandButton btnCancel

```

Caption       = "Cancel"
Height        = 450
Left          = 3060
TabIndex      = 6
Top           = 2790
Width         = 1215

```

End

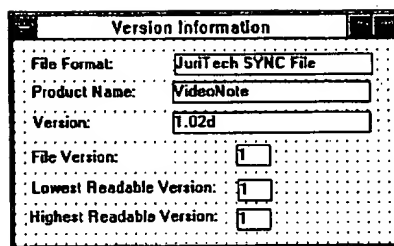
Begin CommandButton btnDone

SEGORDER.FRM - 2

```

        Caption      = "&Done"
        Height       = 450
        Left         = 3060
        TabIndex     = 5
        Top          = 2250
        Width        = 1215
    End
    Begin CommandButton btnReset
        Caption      = "<<- &Reset"
        Height       = 450
        Left         = 3060
        TabIndex     = 4
        Top          = 1365
        Width        = 1215
    End
    Begin CommandButton btnMove
        Caption      = "&Move ->>"
        Default      = -1 'True
        Height       = 450
        Left         = 3060
        TabIndex     = 2
        Top          = 555
        Width        = 1215
    End
    Begin ListBox lstOrg
        Height       = 2760
        Left         = 105
        TabIndex     = 1
        Top          = 495
        Width        = 2910
    End
    Begin Label lblNew
        Caption      = "&New Order:"
        Height       = 285
        Left         = 4365
        TabIndex     = 3
        Top          = 90
        Width        = 1800
    End
    Begin Label lblOriginal
        Caption      = "&Original Order:"
        Height       = 285
        Left         = 135
        TabIndex     = 0
        Top          = 105
        Width        = 1800
    End
End

```



version.bmp



VERSION.FRM - 1

VERSION 2.00

Begin Form Version

```

Caption      = "Version Information"
ClientHeight = 2430
ClientLeft   = 1080
ClientTop    = 1470
ClientWidth  = 4545
Height       = 2835
Left         = 1020
LinkTopic    = "Form2"
ScaleHeight  = 2430
ScaleWidth   = 4545
Top          = 1125
Width        = 4665

```

Begin Label nHiVersion

```

BorderStyle = 1 'Fixed Single
Caption      = "1"
Height       = 255
Left         = 2655
TabIndex     = 11
Top          = 1995
Width        = 405

```

End

Begin Label lblHighestVersion

```

Caption      = "Highest Readable Version:"
Height       = 240
Left         = 165
TabIndex     = 10
Top          = 1980
Width        = 2280

```

End

Begin Label nLoVersion

```

BorderStyle = 1 'Fixed Single
Caption      = "1"
Height       = 255
Left         = 2670
TabIndex     = 9
Top          = 1650
Width        = 405

```

End

Begin Label lblLowestVersion

```

Caption      = "Lowest Readable Version:"
Height       = 240
Left         = 195
TabIndex     = 8
Top          = 1635
Width        = 2280

```

End

Begin Label nFileVersion

```

BorderStyle = 1 'Fixed Single

```

VERSION.FRM - 2

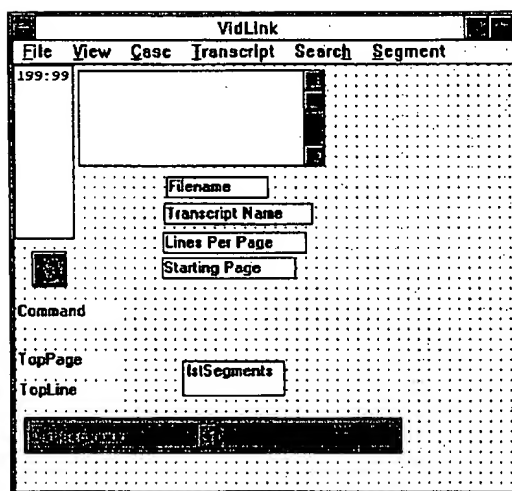
```

Caption      = "1"
Height       = 255
Left         = 2655
TabIndex     = 7
Top          = 1245
Width        = 405
End
Begin Label lblFileVersion
Caption      = "File Version:"
Height       = 240
Left         = 195
TabIndex     = 6
Top          = 1275
Width        = 1650
End
Begin Label sVersion
BorderStyle = 1 'Fixed Single
Caption      = "1.02d"
Height       = 255
Left         = 1905
TabIndex     = 5
Top          = 855
Width        = 2340
End
Begin Label lblVersion
Caption      = "Version:"
Height       = 240
Left         = 225
TabIndex     = 4
Top          = 870
Width        = 1650
End
Begin Label sFileFormat
BorderStyle = 1 'Fixed Single
Caption      = "JuriTech SYNC File"
Height       = 255
Left         = 1935
TabIndex     = 3
Top          = 165
Width        = 2340
End
Begin Label lblFileFormat
Caption      = "File Format:"
Height       = 240
Left         = 210
TabIndex     = 2
Top          = 180
Width        = 1650
End
Begin Label sProductName

```

VERSION.FRM - 3

```
        BorderStyle      = 1 'Fixed Single
        Caption          = "VideoNote"
        Height           = 255
        Left             = 1905
        TabIndex         = 1
        Top              = 495
        Width            = 2340
    End
    Begin Label lblProductName
        Caption          = "Product Name:"
        Height           = 240
        Left             = 210
        TabIndex         = 0
        Top              = 510
        Width            = 1650
    End
End
```



vidlink.bmp

VIDLINK.FRM - 1

VERSION 2.00

Begin Form VidLink

```

Caption      = "VidLink"
ClientHeight = 5025
ClientLeft   = 1005
ClientTop    = 1560
ClientWidth  = 5925
Height       = 5715
Icon         = (Icon)
KeyPreview   = -1 'True
Left         = 945
LinkTopic    = "Form1"
ScaleHeight  = 5025
ScaleWidth   = 5925
Top          = 930
Width        = 6045

```

Begin ListBox lstSegments

```

Height      = 420
Left        = 2010
TabIndex    = 13
Top         = 3495
Visible     = 0 'False
Width       = 1215

```

End

Begin PictureBox z\_frmToolbar

```

BackColor    = &H00C0C0C0&
Height       = 420
Left         = 105
ScaleHeight  = 390
ScaleWidth   = 4470
TabIndex     = 10
Top          = 4170
Width        = 4500

```

Begin ComboBox lstSegNames

```

BackColor    = &H00C0C0C0&
FontBold     = 0 'False
FontItalic   = 0 'False
FontName     = "Courier New"
FontSize     = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height       = 315
Left         = 60
Style        = 2 'Dropdown List
TabIndex     = 11

```

```

Top         = 45
Width       = 2250

```

End

Begin Label lblSel

VIDLINK.FRM - 2

```

        BackColor      = &H00C0C0C0&
        BorderStyle    = 1  'Fixed Single
        FontBold       = 0  'False
        FontItalic     = 0  'False
        FontName       = "Courier New"
        FontSize       = 8.25
        FontStrikethru = 0  'False
        FontUnderline  = 0  'False
        Height        = 300
        Left          = 2025
        TabIndex      = 12
        Top           = 45
        Width         = 2370
    End
End
Begin Timer VideoUpdate
    Interval = 250
    Left = 210
    Top = 2205
End
Begin PictureBox lpFrame
    Height = 2055
    Left = 0
    ScaleHeight = 2025
    ScaleWidth = 690
    TabIndex = 6
    Top = 0
    Width = 720
    Begin Label LP
        Alignment = 1 'Right Justify
        Caption = "199:99"
        FontBold = 0 'False
        FontItalic = 0 'False
        FontName = "Courier New"
        FontSize = 8.25
        FontStrikethru = 0 'False
        FontUnderline = 0 'False
        Height = 4560
        Left = 0
        TabIndex = 5
        Top = 0
        Width = 660
    End
End
Begin Editor Transcript
    BottomMargin = 0
    CaretHeight = -1
    CaretWidth = -1
    FileConvertOemAnsi = 0 'False
    FileOpen = ""

```

VIDLINK.FRM - 3

```

FileSaveAppend = 0 'False
FontBold = 0 'False
FontItalic = 0 'False
FontName = "Courier New"
FontSize = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height = 1140
InsertMode = -1 'True
Left = 780
LeftMargin = 0
Password = 22886
ReadOnly = -1 'True
RightMargin = 0
ScrollBars = 2 'Vertical
SearchCaseSensitive = 0 'False
SearchOrigin = 0 'From Cursor
SearchReplacement = ""
SearchTarget = ""
SearchTo = 1 'Bottom of text
Prop82 = 0 'False
SelBackColor = &H00000000&
SelDefaultType = 1 'Stream
SelDragDropEnable = -1 'True
SelForeColor = &H00FFFFFF&
TabDefaultWidth = -1
TabIndex = 0
Top = 60
TopMargin = 0
UndoLimit = 255
Width = 2940
WrapAutomatically = 0 'False
WrapWholeWords = -1 'True
WrapX = -1
End
Begin Label TopLine
Caption = "TopLine"
Height = 255
Left = 45
TabIndex = 9
Top = 3735
Visible = 0 'False
Width = 1215
End
Begin Label TopPage
Caption = "TopPage"
Height = 255
Left = 30
TabIndex = 8
Top = 3375

```

VIDLINK.FRM - 4

```

        Visible      = 0  'False
        Width        = 1215
    End
    Begin Label Command
        Caption       = "Command"
        Height        = 285
        Left          = 30
        TabIndex      = 7
        Top           = 2805
        Visible       = 0  'False
        Width         = 1215
    End
    Begin Label lblStartingPage
        BorderStyle   = 1  'Fixed Single
        Caption       = "Starting Page"
        Height        = 255
        Left          = 1770
        TabIndex      = 4
        Top           = 2280
        Visible       = 0  'False
        Width         = 1590
    End
    Begin Label lblLinesPerPage
        BorderStyle   = 1  'Fixed Single
        Caption       = "Lines Per Page"
        Height        = 255
        Left          = 1785
        TabIndex      = 3
        Top           = 1980
        Visible       = 0  'False
        Width         = 1710
    End
    Begin Label lblTranscriptName
        BorderStyle   = 1  'Fixed Single
        Caption       = "Transcript Name"
        Height        = 255
        Left          = 1800
        TabIndex      = 2
        Top           = 1635
        Visible       = 0  'False
        Width         = 1770
    End
    Begin Label lblFilename
        BorderStyle   = 1  'Fixed Single
        Caption       = "Filename"
        Height        = 255
        Left          = 1830
        TabIndex      = 1
        Top           = 1320
        Visible       = 0  'False

```



VIDLINK.FRM - 5

```

        Width          = 1215
    End
    Begin Menu ZM_FILE
        Caption          = "&File"
        Begin Menu ZM_FILE_VIEWVIDEO
            Caption       = "Activate &Video"
            Shortcut      = ^V
        End
        Begin Menu ZM_FILE_TOOLS
            Caption       = "&Tools"
            Enabled       = 0 'False
        End
        Begin Menu ZM_FILE_SEP1
            Caption       = "-"
        End
        Begin Menu ZM_FILE_EXIT
            Caption       = "E&xit"
        End
    End
    Begin Menu ZM_VIEW
        Caption          = "&View"
        Begin Menu ZM_VIEW_TOOLBAR
            Caption       = "&Toolbar"
        End
        Begin Menu ZM_VIEW_PAGELINE
            Caption       = "&Page:Line Numbers"
        End
        Begin Menu ZM_VIEW_SEP1
            Caption       = "-"
        End
        Begin Menu ZM_VIEW_TRANSCRIPT
            Caption       = "Transcript &Only"
        End
        Begin Menu ZM_VIEW_ALL
            Caption       = "Show &All"
        End
    End
    Begin Menu ZM_CASE
        Caption          = "&Case"
        Begin Menu ZM_CASE_NEW
            Caption       = "&New"
            Enabled       = 0 'False
        End
        Begin Menu ZM_CASE_OPEN
            Caption       = "&Open..."
            Enabled       = 0 'False
        End
        Begin Menu ZM_CASE_DELETE
            Caption       = "&Delete..."
            Enabled       = 0 'False
    End

```

VIDLINK.FRM - 6

```

End
End
Begin Menu ZM_TRANSCRIPT
  Caption      = "&Transcript"
  Begin Menu ZM_TRANSCRIPT_IMPORT
    Caption    = "&Import..."
    Enabled    = 0 'False'
  End
  Begin Menu ZM_TRANSCRIPT_EXPORT
    Caption    = "&Export..."
    Enabled    = 0 'False'
  End
  Begin Menu ZM_TRANSCRIPT_ISSUES
    Caption    = "I&ssues..."
    Enabled    = 0 'False'
  End
  Begin Menu ZM_TRANSCRIPT_SEP1
    Caption    = "-"
  End
  Begin Menu ZM_TRANSCRIPT_UPDATEVIDEO
    Caption    = "&Update Video"
  End
  Begin Menu ZM_TRANSCRIPT_UPDATE
    Caption    = "Update &Transcript"
  End
End
Begin Menu ZM_FIND
  Caption      = "Searc&h"
  Begin Menu ZM_FIND_FIND
    Caption    = "&Find Text..."
    Shortcut   = ^F
  End
  Begin Menu ZM_FIND_AGAIN
    Caption    = "Find &Again"
    Shortcut   = {F3}
  End
  Begin Menu ZM_FIND_SEP1
    Caption    = "-"
    Visible    = 0 'False'
  End
  Begin Menu ZM_FIND_SETUP
    Caption    = "&Boolean Search Setup..."
    Enabled    = 0 'False'
    Visible    = 0 'False'
  End
  Begin Menu ZM_FIND_FULLTEXT
    Caption    = "Fu&ll Text Search"
    Enabled    = 0 'False'
    Visible    = 0 'False'
  End
End

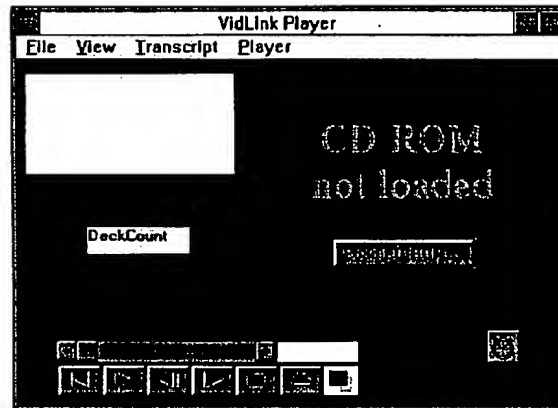
```

VIDLINK.FRM - 7

```

End
Begin Menu ZM_SEG
  Caption      = "&Segment"
  Begin Menu ZM_SEG_AUTODEFINE
    Caption      = "&Auto-Define"
    Checked      = -1 'True
  End
  Begin Menu ZM_SEG_SEP1
    Caption      = "- "
  End
  Begin Menu ZM_SEG_DEFINE
    Caption      = "&Define"
  End
  Begin Menu ZM_SEG_DELETE
    Caption      = "De&lete"
  End
  Begin Menu ZM_SEG_ORDER
    Caption      = "Change &Order"
  End
  Begin Menu ZM_SEG_SEP2
    Caption      = "- "
  End
  Begin Menu ZM_SEG_PLAY
    Caption      = "&Play"
  End
  Begin Menu ZM_SEG_PLAYSEQUENCE
    Caption      = "Play &Sequence"
  End
End
End

```



vidplay.bmp

VIDPLAY.FRM - 1

VERSION 2.00

Begin Form VidPlay

```

BackColor      = &H00000000&
BorderStyle    = 1  'Fixed Single
Caption        = "VidLink Player"
ClientHeight   = 4095
ClientLeft     = 1065
ClientTop      = 1755
ClientWidth    = 6480
Height         = 4785
Icon           = (Icon)
Left           = 1005
LinkTopic      = "Form1"
MaxButton      = 0  'False
ScaleHeight    = 4095
ScaleWidth     = 6480
Top            = 1125
Width          = 6600

```

Begin PictureBox VidPanel

```

BackColor      = &H00000000&
BorderStyle    = 0  'None
Height         = 690
Left           = 450
ScaleHeight    = 690
ScaleWidth     = 3600
TabIndex       = 5
Top            = 3300
Width          = 3600

```

Begin HScrollBar PlayPosition

```

Height         = 270
Left           = 0
TabIndex       = 8
Top            = 15
Width          = 2610

```

End

Begin MMControl Player

```

AutoEnable     = 0  'False
EjectEnabled   = -1 'True
Height         = 405
Index          = 0
Left           = 0
NextVisible    = 0  'False
PauseVisible   = 0  'False
PlayEnabled    = -1 'True
RecordVisible  = 0  'False
StopEnabled    = -1 'True
TabIndex       = 7
Top            = 285
UpdateInterval = 0
Width          = 3180

```

VIDPLAY.FRM - 2

```

End
Begin PictureBox btnSendToBack
    BackColor      = &H00FFFFFF&
    BorderStyle    = 0 'None
    Height         = 340
    Left           = 3175
    Picture        = (Bitmap)
    ScaleHeight    = 345
    ScaleWidth     = 405
    TabIndex       = 6
    Top            = 315
    Width          = 410
End
Begin Label PlayTime
    Alignment      = 2 'Center
    BorderStyle    = 1 'Fixed Single
    FontBold       = 0 'False
    FontItalic     = 0 'False
    FontName       = "Arial"
    FontSize       = 9.75
    FontStrikethru = 0 'False
    FontUnderline  = 0 'False
    Height         = 270
    Left           = 2610
    TabIndex       = 9
    Top            = 15
    Width          = 990
End
End
Begin PictureBox VidScreen
    BackColor      = &H00000000&
    BorderStyle    = 0 'None
    Height         = 2985
    Left           = 0
    ScaleHeight    = 2985
    ScaleWidth     = 6405
    TabIndex       = 0
    Top            = 15
    Width          = 6405
Begin PictureBox MediaOffline
    BackColor      = &H00808080&
    BorderStyle    = 0 'None
    Height         = 2700
    Left           = 2715
    ScaleHeight    = 2700
    ScaleWidth     = 3600
    TabIndex       = 2
    Top            = 165
    Visible        = 0 'False
    Width          = 3600

```

VIDPLAY.FRM - 3

```

Begin PictureBox OfflineMessage
  BackColor      = &H00808080&
  BorderStyle    = 0 'None
  Height         = 1005
  Left           = 705
  Picture        = (Bitmap)
  ScaleHeight    = 1005
  ScaleWidth     = 2355
  TabIndex       = 4
  Top            = 510
  Width          = 2355
End
Begin CommandButton btnLoad
  Caption        = "Load CD ROM..."
  Height         = 345
  Left           = 1020
  TabIndex       = 3
  Top            = 1935
  Width          = 1710
End
End
Begin MCIWND Video
  AutosizeMovie  = 0 'False
  AutosizeWindow = -1 'True
  BorderStyle    = 0 'None
  ErrorDlg       = 0 'False
  Filename       = ""
  Height         = 1185
  Index          = 0
  Left           = 105
  Menu           = -1 'True
  Playbar        = 0 'False
  Record         = 0 'False
  Repeat         = 0 'False
  Speed          = 1000
  TimeFormat     = ""
  TimerFreq      = 500
  Top            = 150
  Visible        = 0 'False
  Volume         = 1000
  WantPosEvent   = 0 'False
  Width          = 2475
  Zoom           = 100
End
Begin Label DeckCount
  Caption        = "DeckCount"
  Height         = 315
  Left           = 825
  TabIndex       = 1
  Top            = 1965

```

VIDPLAY.FRM - 4

```

        Visible      = 0 'False
        Width        = 1215
    End
End
Begin Timer VTimer
    Left      = 5565
    Top       = 3180
End
Begin Menu IDM_FILE
    Caption    = "&File"
    Begin Menu IDM_FILE_MOUNT
        Caption = "&Load CD ROM..."
    End
    Begin Menu IDM_FILE_EJECT
        Caption = "&Unload CD ROM"
    End
    Begin Menu IDM_FILE_SEP1
        Caption = "-"
    End
    Begin Menu IDM_FILE_ABOUT
        Caption = "A&bout VidLink..."
    End
    Begin Menu IDM_FILE_EXIT
        Caption = "E&xit"
    End
End
Begin Menu IDM_VIEW
    Caption    = "&View"
    Begin Menu IDM_VIEW_REFRESH
        Caption = "&Refresh Video"
    End
    Begin Menu IDM_VIEW_SENDBACK
        Caption = "&Send to Back"
    End
    Begin Menu IDM_VIEW_TRANSCRIPT
        Caption = "A&ctivate &Transcript"
    End
    Begin Menu IDM_VIEW_SEP1
        Caption = "-"
    End
    Begin Menu IDM_VIEW_DOUBLESIZE
        Caption = "&Double Size"
    End
    Begin Menu IDM_VIEW_CLICKMOVE
        Caption = "&Click-Move"
    End
    Begin Menu IDM_VIEW_BLACKOUT
        Caption = "&Blackout Background"
    End
    Begin Menu IDM_VIEW_ALWAYSONTOP

```



VIDPLAY.FRM - 5

```

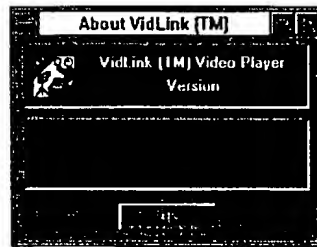
        Caption      = "&Always on Top"
    End
End
Begin Menu IDM_TRANSCRIPT
    Caption      = "&Transcript"
    Begin Menu IDM_TRANSCRIPT_AUTOUPDATE
        Caption  = "Auto-&Update"
    End
    Begin Menu IDM_TRANSCRIPT_SEP1
        Caption  = "-"
    End
    Begin Menu IDM_TRANSCRIPT_UPDATETRANSCRIPT
        Caption  = "Update &Transcript"
    End
    Begin Menu IDM_TRANSCRIPT_UPDATEVIDEO
        Caption  = "Update &Video"
    End
    Begin Menu IDM_TRANSCRIPT_SEP2
        Caption  = "-"
    End
    Begin Menu IDM_TRANSCRIPT_TEXTPOSITION
        Caption  = "Transcript Text &Position..."
    End
End
Begin Menu IDM_PLAYER
    Caption      = "&Player"
    Begin Menu IDM_PLAYER_PLAY
        Caption  = "&Play"
        Shortcut = ^P
    End
    Begin Menu IDM_PLAYER_STOP
        Caption  = "&Stop"
        Shortcut = ^S
    End
    Begin Menu IDM_PLAYER_SEP1
        Caption  = "-"
    End
    Begin Menu IDM_PLAYER_GOTO
        Caption  = "&Go to..."
    End
    Begin Menu IDM_PLAYER_SCROLLOPTIONS
        Caption  = "Scroll &Options..."
    End
End
Begin Menu IDM_DEBUG
    Caption      = "&Debug"
    Visible      = 0 'False
End
End

```

5,832,171

181

182



vlabout.bmp

VLABOUT.FRM - 1

VERSION 2.00

Begin Form VLABout

```

BorderStyle = 3 'Fixed Double
Caption      = "About VidLink (TM)"
ClientHeight = 2430
ClientLeft   = 2775
ClientTop    = 2940
ClientWidth  = 3615
ControlBox   = 0 'False
Height       = 2835
Left         = 2715
LinkTopic    = "Form1"
MaxButton    = 0 'False
MinButton    = 0 'False
ScaleHeight  = 2430
ScaleWidth   = 3615
Top          = 2595
Width        = 3735

```

Begin SSCommand btnOk

```

Caption      = "Ok"
Font3D       = 0 'None
Height       = 360
Left         = 1200
Picture      = (none)
TabIndex     = 7
Top          = 1950
Width        = 1215

```

End

Begin SSPanel pnlFrame

```

BackColor    = &H00C0C0C0&
BevelOuter   = 1 'Inset
BevelWidth    = 0
BorderWidth  = 0
FloodColor   = &H00808000&
Font3D       = 0 'None
Height       = 2565
Left         = 0
TabIndex     = 0
Top          = 0
Width        = 3615

```

Begin SSPanel pnlNotice

```

BackColor    = &H00808080&
BevelOuter   = 1 'Inset
BevelWidth    = 2
Font3D       = 0 'None
Height       = 825
Left         = 105
ShadowColor   = 1 'Black
TabIndex     = 4
Top          = 990

```

VLABOUT.FRM - 2

```

Width          = 3405
Begin Label lblCopyright
  Alignment     = 2 'Center
  BackColor     = &H00808080&
  Caption       = "Copyright (c) 1996 by JuriTech, Inc."
  FontBold      = 0 'False
  FontItalic    = 0 'False
  FontName      = "MS Sans Serif"
  FontSize      = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  ForeColor     = &H00000000&
  Height        = 285
  Left          = 135
  TabIndex      = 6
  Top           = 120
  Width         = 3150
End
Begin Label lblTrademark
  Alignment     = 2 'Center
  BackColor     = &H00808080&
  Caption       = "VidLink(TM) is a Trademark of JuriTech, Inc."
  FontBold      = 0 'False
  FontItalic    = 0 'False
  FontName      = "MS Sans Serif"
  FontSize      = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  ForeColor     = &H00000000&
  Height        = 315
  Left          = 105
  TabIndex      = 5
  Top           = 420
  Width         = 3165
End
End
Begin SSPanel pnlBanner
  BackColor     = &H00808080&
  BevelOuter    = 1 'Inset
  BevelWidth    = 2
  Font3D        = 0 'None
  Height        = 750
  Left          = 105
  ShadowColor   = 1 'Black
  TabIndex      = 1
  Top           = 105
  Width         = 3405
Begin Label lblName
  Alignment     = 2 'Center
  BackColor     = &H00808080&

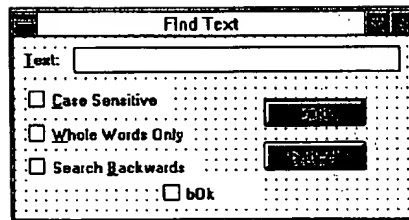
```

VLABOUT.FRM - 3

```

Caption      = "VidLink (TM) Video Player"
ForeColor    = &H0000FFFF&
Height       = 300
Left         = 750
TabIndex     = 3
Top          = 105
Width        = 2535
End
Begin Image iconVN
BorderStyle  = 1 'Fixed Single
Height       = 510
Left         = 105
Picture      = (Icon)
Top          = 120
Width        = 510
End
Begin Label lblVersion
Alignment    = 2 'Center
BackColor    = &H00808080&
Caption      = "Version"
ForeColor    = &H0000FFFF&
Height       = 300
Left         = 750
TabIndex     = 2
Top          = 375
Width        = 2535
End
End
End
End
End

```



vlfind.bmp

VLFIND.FRM - 1

VERSION 2.00

Begin Form FindText

```

BorderStyle   = 3  'Fixed Double
Caption        = "Find Text"
ClientHeight   = 1770
ClientLeft     = 1995
ClientTop      = 2505
ClientWidth    = 4755
ControlBox     = 0  'False
Height         = 2175
Left           = 1935
LinkTopic      = "Form2"
MaxButton      = 0  'False
MinButton      = 0  'False
ScaleHeight    = 1770
ScaleWidth     = 4755
Top            = 2160
Width          = 4875

```

Begin CheckBox bOk

```

Caption        = "bOk"
Height         = 390
Left           = 1770
TabIndex       = 7
Top            = 1650
Visible        = 0  'False
Width          = 1215

```

End

Begin CommandButton btnCancel

```

Cancel         = -1 'True
Caption        = "Cancel"
Height         = 330
Left           = 2985
TabIndex       = 6
Top            = 1245
Width          = 1215

```

End

Begin CommandButton btnFind

```

Caption        = "&Find"
Default        = -1 'True
Height         = 330
Left           = 2985
TabIndex       = 5
Top            = 735
Width          = 1215

```

End

Begin CheckBox bBackwards

```

Caption        = "Search &Backwards"
Height         = 330
Left           = 165
TabIndex       = 4

```

VLFIND.FRM - 2

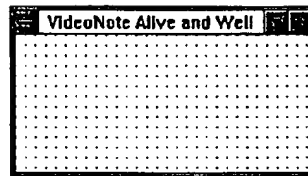
```
        Top           = 1365
        Width          = 2025
    End
    Begin CheckBox bWholeWordsOnly
        Caption         = "&Whole Words Only"
        Height          = 330
        Left            = 165
        TabIndex        = 3
        Top             = 975
        Width           = 1965
    End
    Begin CheckBox bCaseSensitive
        Caption         = "&Case Sensitive"
        Height          = 330
        Left            = 160
        TabIndex        = 2
        Top             = 570
        Width           = 1695
    End
    Begin TextBox txtText
        Height          = 300
        Left            = 705
        TabIndex        = 1
        Top             = 120
        Width           = 3900
    End
    Begin Label lblText
        Caption         = "&Text:"
        Height          = 270
        Left            = 105
        TabIndex        = 0
        Top             = 165
        Width           = 525
    End
End
```



195

5,832,171

196



vnaive.bmp

VNALIVE.FRM - 1

VERSION 2.00

Begin Form VNAlive

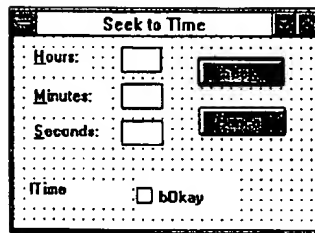
Caption	=	"VideoNote Alive and Well"
ClientHeight	=	1620
ClientLeft	=	2235
ClientTop	=	2895
ClientWidth	=	3540
Height	=	2025
Left	=	2175
LinkTopic	=	"Form2"
ScaleHeight	=	1620
ScaleWidth	=	3540
Top	=	2550
Width	=	3660

End

5,832,171

199

200



vngoto.bmp

VNGOTO.FRM - 1

VERSION 2.00

Begin Form VNGoTo

```

BorderStyle = 3 'Fixed Double
Caption      = "Seek to Time"
ClientHeight = 1395
ClientLeft   = 3210
ClientTop    = 2730
ClientWidth  = 3705
ControlBox   = 0 'False
Height       = 1800
Left         = 3150
LinkTopic    = "Form2"
MaxButton    = 0 'False
MinButton    = 0 'False
ScaleHeight  = 1395
ScaleWidth   = 3705
Top          = 2385
Width        = 3825

```

Begin CheckBox bOkay

```

Caption      = "bOkay"
Height       = 495
Left         = 1485
TabIndex     = 8
Top          = 1635
Visible      = 0 'False
Width        = 1215

```

End

Begin CommandButton btnCancel

```

Cancel       = -1 'True
Caption      = "Cancel"
Height       = 345
Left         = 2250
TabIndex     = 7
Top          = 825
Width        = 1065

```

End

Begin CommandButton btnSeek

```

Caption      = "See&k"
Default      = -1 'True
Height       = 345
Left         = 2235
TabIndex     = 6
Top          = 240
Width        = 1065

```

End

Begin TextBox txtSeconds

```

Height       = 300
Left         = 1305
TabIndex     = 5
Top          = 990

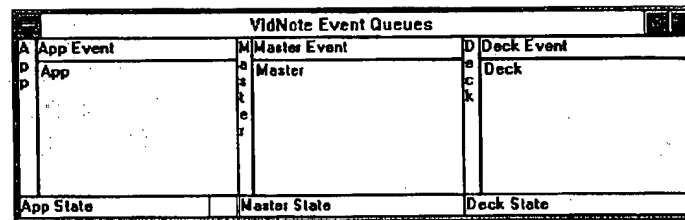
```

VNGOTO.FRM - 2

```

        Width          = 510
    End
    Begin TextBox txtMinutes
        Height          = 300
        Left             = 1305
        TabIndex         = 3
        Top              = 555
        Width            = 510
    End
    Begin TextBox txtHours
        Height          = 300
        Left             = 1305
        TabIndex         = 1
        Top              = 120
        Width            = 495
    End
    Begin Label lblTime
        Caption          = "lTime"
        Height           = 300
        Left             = 180
        TabIndex         = 9
        Top              = 1710
        Width            = 1215
    End
    Begin Label Label3
        Caption          = "&Seconds:"
        Height           = 270
        Left             = 240
        TabIndex         = 4
        Top              = 1020
        Width            = 945
    End
    Begin Label Label2
        Caption          = "&Minutes:"
        Height           = 285
        Left             = 240
        TabIndex         = 2
        Top              = 600
        Width            = 855
    End
    Begin Label lblHours
        Caption          = "&Hours:"
        Height           = 300
        Left             = 240
        TabIndex         = 0
        Top              = 135
        Width            = 645
    End
End
End

```



vnq.bmp

VNQ.FRM - 1

VERSION 2.00

Begin Form VNQ

```

BorderStyle   = 1  'Fixed Single
Caption       = "VidNote Event Queues"
ClientHeight  = 2115
ClientLeft    = 960
ClientTop     = 345
ClientWidth   = 7965
ControlBox    = 0  'False
Height        = 2520
Icon          = (Icon)
Left          = 900
LinkTopic     = "Form2"
MaxButton     = 0  'False
ScaleHeight   = 2115
ScaleWidth    = 7965
Top           = 0
Width         = 8085

```

Begin ListBox Deck

```

Height        = 1590
Left          = 5460
TabIndex      = 5
Top           = 270
Width         = 2505

```

End

Begin ListBox App

```

Height        = 1590
Left          = 225
TabIndex      = 1
Top           = 270
Width         = 2355

```

End

Begin ListBox Master

```

Height        = 1590
Left          = 2760
TabIndex      = 0
Top           = 270
Width         = 2505

```

End

Begin Label lblAppActive

```

BorderStyle   = 1  'Fixed Single
Height        = 255
Left          = 2220
TabIndex      = 12
Top           = 1860
Width         = 345

```

End

Begin Label lblDeckState

```

BorderStyle   = 1  'Fixed Single
Caption       = "Deck State"

```

VNQ.FRM - 2

```

        Height      = 255
        Left         = 5260
        TabIndex     = 11
        Top          = 1860
        Width        = 2700
    End
    Begin Label lblMasterState
        BorderStyle   = 1 'Fixed Single
        Caption       = "Master State"
        Height        = 255
        Left          = 2580
        TabIndex      = 10
        Top           = 1860
        Width         = 2685
    End
    Begin Label lblAppState
        BorderStyle   = 1 'Fixed Single
        Caption       = "App State"
        Height        = 255
        Left          = 0
        TabIndex      = 9
        Top           = 1860
        Width         = 2235
    End
    Begin Label lblDeckEvent
        BorderStyle   = 1 'Fixed Single
        Caption       = "Deck Event"
        Height        = 270
        Left          = 5460
        TabIndex      = 8
        Top           = 0
        Width         = 2505
    End
    Begin Label lblMasterEvent
        BorderStyle   = 1 'Fixed Single
        Caption       = "Master Event"
        Height        = 270
        Left          = 2760
        TabIndex      = 7
        Top           = 0
        Width         = 2505
    End
    Begin Label lblAppEvent
        BorderStyle   = 1 'Fixed Single
        Caption       = "App Event"
        Height        = 270
        Left          = 225
        TabIndex      = 6
        Top           = 0
        Width         = 2355

```



VNQ.FRM - 3

```

End
Begin Label Label3
  BorderStyle = 1 'Fixed Single
  Caption     = "D e c k"
  Height      = 1860
  Left        = 5260
  TabIndex    = 4
  Top         = 0
  Width       = 200
  WordWrap    = -1 'True
End
Begin Label Label2
  BorderStyle = 1 'Fixed Single
  Caption     = "M a s t e r"
  Height      = 1860
  Left        = 2580
  TabIndex    = 3
  Top         = 0
  Width       = 180
  WordWrap    = -1 'True
End
Begin Label Label1
  BorderStyle = 1 'Fixed Single
  Caption     = "A p p"
  Height      = 1860
  Left        = 0
  TabIndex    = 2
  Top         = 0
  Width       = 230
  WordWrap    = -1 'True
End
End

```

PART 3.

## LIPSYNC

Form text and graphical representation files FRM

Checking Video Files...

#	CD ROM	Frames	mSecs.	Filename
FileList				

\* indicates a problem with the video file.  
Click on a file for a description of the  
Click on a file for a description of the problem.

Problem:

☐ Valid

Buttons: [Icons]

checkfil.bmp

CHECKFIL.FRM - 1

VERSION 2.00

Begin Form CheckFiles

```

BorderStyle = 3 'Fixed Double
Caption = "Checking Video Files..."
ClientHeight = 2310
ClientLeft = 1275
ClientTop = 1380
ClientWidth = 7365
ControlBox = 0 'False
Height = 2715
Left = 1215
LinkTopic = "Form1"
MaxButton = 0 'False
MinButton = 0 'False
ScaleHeight = 2310
ScaleWidth = 7365
Top = 1035
Width = 7485

```

Begin CommandButton btnOk

```

Caption = "Continue"
Default = -1 'True
Height = 315
Left = 3075
TabIndex = 3
Top = 2550
Width = 1275

```

End

Begin ListBox ProblemList

```

Height = 615
Left = 6090
TabIndex = 8
Top = 3435
Visible = 0 'False
Width = 870

```

End

Begin MMControl Player

```

Height = 330
Left = 5670
TabIndex = 7
Top = 4680
Visible = 0 'False
Width = 3540

```

End

Begin CheckBox bValid

```

Caption = "Valid"
Height = 255
Left = 705
TabIndex = 6
TabStop = 0 'False
Top = 4695

```

CHECKFIL.FRM - 2

```

        Visible      = 0   'False
        Width        = 1365
    End
    Begin CommandButton btnCancel
        Cancel        = -1   'True
        Caption       = "Return to Main Window"
        Height        = 330
        Left          = 4695
        TabIndex      = 5
        Top           = 2430
        Width         = 2520
    End
    Begin ListBox FileList
        FontBold       = 0   'False
        FontItalic     = 0   'False
        FontName       = "Courier New"
        FontSize       = 9.75
        FontStrikethru = 0   'False
        FontUnderline  = 0   'False
        Height        = 1950
        Left          = 15
        TabIndex      = 1
        Top           = 350
        Width         = 7335
    End
    Begin Line Line5
        BorderWidth    = 2
        X1             = 0
        X2             = 7500
        Y1             = 340
        Y2             = 340
    End
    Begin Line Line4
        X1             = 0
        X2             = 7500
        Y1             = 0
        Y2             = 0
    End
    Begin Line Line3
        BorderWidth    = 2
        X1             = 7345
        X2             = 7345
        Y1             = 0
        Y2             = 2280
    End
    Begin Line Line2
        BorderWidth    = 2
        X1             = 15
        X2             = 15
        Y1             = 0

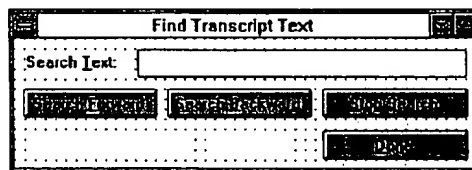
```

CHECKFIL.FRM - 3

```

        Y2          = 2280
    End
    Begin Line Line1
        X1          = 15
        X2          = 8015
        Y1          = 2290
        Y2          = 2290
    End
    Begin Label lblFootnote
        Caption      = "* indicates a problem with the video file. Click on
        Height       = 450
        Left         = 45
        TabIndex     = 4
        Top          = 2355
        Width        = 3960
    End
    Begin Label txtProblem
        BorderStyle  = 1 'Fixed Single
        Caption      = "Click on a file for a description of the problem."
        Height       = 540
        Left         = 120
        TabIndex     = 2
        Top          = 2850
        Width        = 4185
    End
    Begin Label lblHeader
        Caption      = " # CD ROM Frames mSecs. Filename"
        FontBold     = 0 'False
        FontItalic   = 0 'False
        FontName     = "Courier New"
        FontSize     = 9.75
        FontStrikethru = 0 'False
        FontUnderline = 0 'False
        Height       = 345
        Left         = 60
        TabIndex     = 0
        Top          = 0
        Width        = 7365
    End
End

```



findtext.bmp

FINDTEXT.FRM - 1

VERSION 2.00

Begin Form FindText

```

BorderStyle   = 3  'Fixed Double
Caption       = "Find Transcript Text"
ClientHeight  = 1530
ClientLeft    = 2235
ClientTop     = 1785
ClientWidth   = 5535
ControlBox    = 0  'False
Height        = 1935
Left          = 2175
LinkTopic     = "Form2"
MaxButton     = 0  'False
MinButton     = 0  'False
ScaleHeight   = 1530
ScaleWidth    = 5535
Top           = 1440
Width         = 5655

```

Begin CommandButton btnDone

```

Caption       = "&Done"
Height        = 345
Left          = 3690
TabIndex      = 7
Top           = 1095
Width         = 1740

```

End

Begin CommandButton btnStop

```

Caption       = "&Stop Search"
Enabled       = 0  'False
Height        = 345
Left          = 3690
TabIndex      = 6
Top           = 600
Width         = 1740

```

End

Begin CommandButton btnBackward

```

Caption       = "Search &Backward"
Height        = 345
Left          = 1830
TabIndex      = 5
Top           = 600
Width         = 1740

```

End

Begin CommandButton btnForward

```

Caption       = "Search &Forward"
Height        = 345
Left          = 105
TabIndex      = 4
Top           = 600
Width         = 1605

```

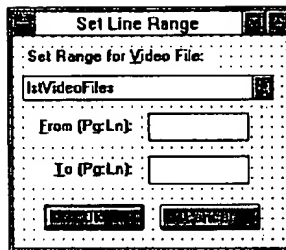
FINDTEXT.FRM - 2

```

End
Begin TextBox txtSearchText
    FontBold      = 0   'False
    FontItalic    = 0   'False
    FontName      = "Arial"
    FontSize      = 8.25
    FontStrikethru = 0   'False
    FontUnderline = 0   'False
    Height        = 330
    Left          = 1470
    TabIndex      = 1
    Top           = 135
    Width         = 3945
End
Begin Label lblSearchLine
    FontBold      = 0   'False
    FontItalic    = 0   'False
    FontName      = "Arial"
    FontSize      = 9.75
    FontStrikethru = 0   'False
    FontUnderline = 0   'False
    Height        = 315
    Left          = 2355
    TabIndex      = 3
    Top           = 1110
    Width         = 945
End
Begin Label lblSearching
    FontBold      = 0   'False
    FontItalic    = 0   'False
    FontName      = "Arial"
    FontSize      = 9.75
    FontStrikethru = 0   'False
    FontUnderline = 0   'False
    Height        = 300
    Left          = 135
    TabIndex      = 2
    Top           = 1110
    Width         = 1965
End
Begin Label lblSearchText
    Caption       = "Search &Text:"
    Height        = 285
    Left          = 135
    TabIndex      = 0
    Top           = 180
    Width         = 1230
End
End

```





linerang.bmp

LINERANG.FRM - 1

VERSION 2.00

Begin Form LineRange

```

BorderStyle = 3 'Fixed Double
Caption      = "Set Line Range"
ClientHeight = 2505
ClientLeft   = 2910
ClientTop    = 1875
ClientWidth  = 3345
ControlBox   = 0 'False
Height       = 2910
Left         = 2850
LinkTopic    = "Form1"
MaxButton    = 0 'False
MinButton    = 0 'False
ScaleHeight  = 2505
ScaleWidth   = 3345
Top          = 1530
Width        = 3465

```

Begin CommandButton btnCancel

```

Cancel      = -1 'True
Caption     = "Cancel"
Height      = 300
Left        = 1770
TabIndex    = 7
Top         = 1995
Width       = 1215

```

End

Begin CommandButton btnOk

```

Caption     = "Ok"
Default     = -1 'True
Height      = 300
Left        = 375
TabIndex    = 6
Top         = 1995
Width       = 1215

```

End

Begin TextBox txtTo

```

Height      = 330
Left        = 1635
TabIndex    = 5
Top         = 1425
Width       = 1215

```

End

Begin TextBox txtFrom

```

Height      = 330
Left        = 1635
TabIndex    = 3
Top         = 915
Width       = 1215

```

End

LINERANG.FRM - 2

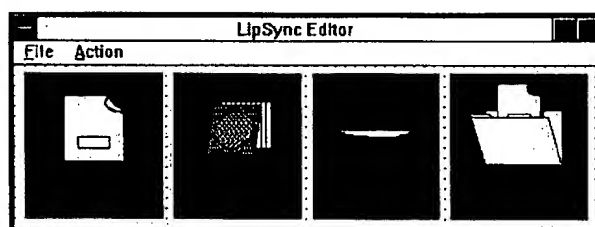
dec

```

Begin ComboBox lstVideoFiles
    Height      = 300
    Left        = 120
    Style       = 2 'Dropdown List
    TabIndex    = 1

    Top         = 465
    Width       = 3030
End
Begin Label lblTo
    Alignment   = 1 'Right Justify
    Caption     = "&To (Pg:Ln):"
    Height      = 255
    Left        = 180
    TabIndex    = 4
    Top         = 1470
    Width       = 1290
End
Begin Label lblFrom
    Alignment   = 1 'Right Justify
    Caption     = "&From (Pg:Ln):"
    Height      = 255
    Left        = 180
    TabIndex    = 2
    Top         = 960
    Width       = 1290
End
Begin Label lblVideoFiles
    Caption     = "Set Range for &Video File:"
    Height      = 255
    Left        = 180
    TabIndex    = 0
    Top         = 135
    Width       = 2265
End
End

```



lipsync.bmp

LIPSYNC.FRM - 1

VERSION 2.00

Begin Form LS

```

BackColor      = &H0080FF80&
BorderStyle    = 1  'Fixed Single
Caption        = "LipSync Editor"
ClientHeight   = 1920
ClientLeft     = 1350
ClientTop      = 2760
ClientWidth    = 7020
Height         = 2610
Icon           = (Icon)
Left           = 1290
LinkTopic      = "Form1"
MaxButton      = 0  'False
ScaleHeight    = 1920
ScaleWidth     = 7020
Top            = 2130
Width          = 7140

```

Begin PictureBox btnMakeSync

```

BackColor      = &H00FFFF00&
Height         = 1725
Left           = 5235
Picture        = (Bitmap)
ScaleHeight    = 1695
ScaleWidth     = 1620
TabIndex       = 3
Top            = 90
Width          = 1650

```

End

Begin PictureBox btnVideoFilesList

```

BackColor      = &H00FFFF00&
Height         = 1725
Left           = 1890
Picture        = (Bitmap)
ScaleHeight    = 1695
ScaleWidth     = 1515
TabIndex       = 2
Top            = 90
Width          = 1545

```

End

Begin PictureBox btnSyncVideo

```

BackColor      = &H00FFFF00&
Height         = 1725
Left           = 3570
Picture        = (Bitmap)
ScaleHeight    = 1695
ScaleWidth     = 1515
TabIndex       = 1
Top            = 90
Width          = 1545

```

LIPSYNC.FRM - 2

```

End
Begin PictureBox btnTransInfo
    BackColor      = &H00FFFF00&
    Height         = 1725
    Left           = 120
    Picture        = (Bitmap)
    ScaleHeight    = 1695
    ScaleWidth     = 1620
    TabIndex       = 0
    Top            = 90
    Width          = 1650
End
Begin Label lblFindText
    Height         = 285
    Left           = 1905
    TabIndex       = 4
    Top            = 4035
    Visible        = 0 'False
    Width          = 1665
End
Begin Menu IDM_FILE
    Caption        = "&File"
    Begin Menu IDM_FILE_NEW
        Caption    = "&New"
    End
    Begin Menu IDM_FILE_OPEN
        Caption    = "&Open..."
    End
    Begin Menu IDM_FILE_SAVE
        Caption    = "&Save"
    End
    Begin Menu IDM_FILE_SAVEAS
        Caption    = "Save &As..."
    End
    Begin Menu IDM_FILE_SEP1
        Caption    = "-"
    End
    Begin Menu IDM_FILE_IMPORT
        Caption    = "&Import SYN File..."
    End
    Begin Menu IDM_FILE_SEP2
        Caption    = "-"
    End
    Begin Menu IDM_FILE_ABOUT
        Caption    = "A&bout LipSync..."
    End
    Begin Menu IDM_FILE_EXIT
        Caption    = "E&xit"
    End
End

```

LIPSYNC.FRM - 3

```

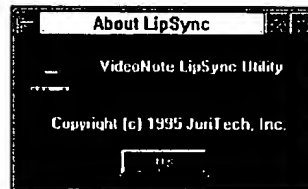
Begin Menu IDM_EDIT
  Caption      = "&Action"
  Begin Menu IDM_ACTION_TRANSCRIPTINFO
    Caption    = "&Transcript Info..."
  End
  Begin Menu IDM_ACTION_VIDEOSFILES
    Caption    = "&Video Files List..."
  End
  Begin Menu IDM_ACTION_SYNCVIDEO
    Caption    = "&Sync Video..."
  End
  Begin Menu IDM_ACTION_MAKESYNC
    Caption    = "&Make SYN File..."
  End
End
Begin Menu IDM_DEBUG
  Caption      = "&Debug"
  Visible      = 0 'False
  Begin Menu IDM_DEBUG_STATE
    Caption    = "&Internal State"
  End
End
End

```

5,832,171

241

242



lsabout.bmp



LSABOUT.FRM - 1

VERSION 2.00

Begin Form LipSyncAbout

```

BackColor      = &H00000080&
BorderStyle    = 3 'Fixed Double
Caption        = "About LipSync"
ClientHeight   = 1785
ClientLeft     = 2475
ClientTop      = 2760
ClientWidth    = 3525
ControlBox     = 0 'False
Height         = 2190
Left           = 2415
LinkTopic      = "Form1"
MaxButton      = 0 'False
MinButton      = 0 'False
ScaleHeight    = 1785
ScaleWidth     = 3525
Top            = 2415
Width          = 3645

```

Begin CommandButton btnOk

```

Caption        = "OK"
Height         = 330
Left           = 1245
TabIndex       = 2
Top            = 1320
Width          = 1065

```

End

Begin Label lblVersion

```

Alignment      = 2 'Center
BackColor      = &H00000080&
ForeColor      = &H00FFFFFF&
Height         = 270
Left           = 1335
TabIndex       = 3
Top            = 540
Width          = 1470

```

End

Begin Label Label2

```

BackColor      = &H00000080&
Caption        = "Copyright (c) 1995 JuriTech, Inc."
ForeColor      = &H00FFFFFF&
Height         = 270
Left           = 420
TabIndex       = 1
Top            = 930
Width          = 3105

```

End

Begin Label Label1

```

BackColor      = &H00000080&
Caption        = "VideoNote LipSync Utility"

```

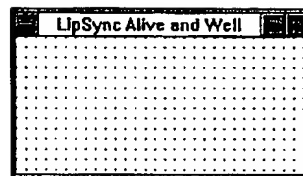
LSABOUT.FRM - 2

```
        ForeColor      &H00FFFFFF&
        Height          =    270
        Left             =   1005
        TabIndex         =     0
        Top              =    255
        Width            =   2310
    End
    Begin Image Image1
        Height           =    480
        Left              =    165
        Picture           =    (Icon)
        Top               =    180
        Width             =    480
    End
End
```

247

5,832,171

248



lsalive.bmp

LSALIVE.FRM - 1

VERSION 2.00

Begin Form LSALive

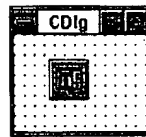
Caption	=	"LipSync Alive and Well"
ClientHeight	=	1620
ClientLeft	=	2805
ClientTop	=	3270
ClientWidth	=	3540
Height	=	2025
Left	=	2745
LinkTopic	=	"Form2"
ScaleHeight	=	1620
ScaleWidth	=	3540
Top	=	2925
Width	=	3660

End

251

5,832,171

252



lscd.bmp

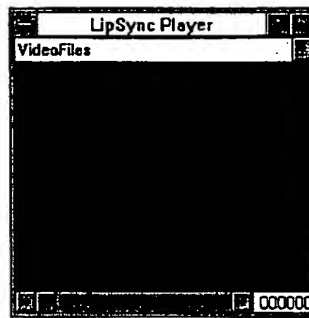
```
LSCD.FRM - 1

VERSION 2.00
Begin Form LSCD
    Caption           = "CDlg"
    ClientHeight      = 1155
    ClientLeft        = 1095
    ClientTop         = 1485
    ClientWidth       = 1590
    Height            = 1560
    Left              = 1035
    LinkTopic         = "Form1"
    ScaleHeight       = 1155
    ScaleWidth        = 1590
    Top               = 1140
    Width             = 1710
    Begin CommonDialog d
        Left          = 420
        Top           = 300
    End
End
```

255

5,832,171

256



lsviewer.bmp

LSVIEWER.FRM - 1

VERSION 2.00

Begin Form LSViewer

```

BorderStyle = 1 'Fixed Single
Caption = "LipSync Player"
ClientHeight = 3255
ClientLeft = 2835
ClientTop = 375
ClientWidth = 3585
ControlBox = 0 'False
FontBold = 0 'False
FontItalic = 0 'False
FontName = "MS Sans Serif"
FontSize = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height = 3660
Icon = (Icon)
KeyPreview = -1 'True
Left = 2775
LinkTopic = "Form1"
MaxButton = 0 'False
ScaleHeight = 3255
ScaleWidth = 3585
Top = 30
Width = 3705

```

Begin ComboBox VideoFiles

```

Height = 300
Left = 0
Style = 2 'Dropdown List
TabIndex = 4

Top = 0
Width = 3580

```

End

Begin HScrollBar PlayPosition

```

Height = 270
Left = 0
TabIndex = 2
Top = 3000
Width = 2850

```

End

Begin PictureBox PlayWindow

```

BackColor = &H00000000&
Height = 2720
Left = 0
ScaleHeight = 2685
ScaleWidth = 3555
TabIndex = 1
Top = 285
Width = 3590

```

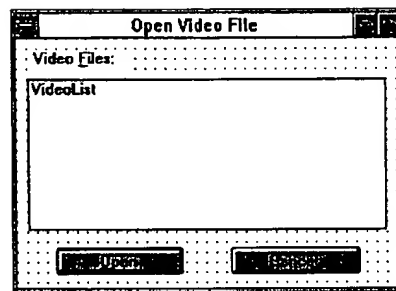


LSVIEWER.FRM - 2

```

End
Begin MMControl Player
    EjectVisible    = 0    'False
    Height          = 450
    Left            = 0
    NextVisible     = 0    'False
    RecordVisible   = 0    'False
    TabIndex        = 0
    Top             = -500
    Width           = 3450
End
Begin Label SeekTo
    Caption         = "Seek To"
    Height          = 495
    Left            = -1500
    TabIndex        = 5
    Top             = 1380
    Width           = 1215
End
Begin Label Counter
    Alignment       = 1    'Right Justify
    BorderStyle     = 1    'Fixed Single
    Caption         = "000000"
    FontBold        = 0    'False
    FontItalic      = 0    'False
    FontName        = "Arial"
    FontSize        = 9.75
    FontStrikethru   = 0    'False
    FontUnderline   = 0    'False
    Height          = 270
    Left            = 2850
    TabIndex        = 3
    Top             = 3000
    Width           = 740
End
End

```



openvide.bmp

OPENVIDE.FRM - 1

VERSION 2.00

Begin Form OpenVideo

```

BorderStyle      = 3 'Fixed Double
Caption          = "Open Video File"
ClientHeight     = 2955
ClientLeft       = 2610
ClientTop        = 2415
ClientWidth      = 4620
ControlBox       = 0 'False
Height           = 3360
Left             = 2550
LinkTopic        = "Form2"
MaxButton        = 0 'False
MinButton        = 0 'False
ScaleHeight      = 2955
ScaleWidth       = 4620
Top              = 2070
Width            = 4740

```

Begin CommandButton btnCancel

```

Cancel          = -1 'True
Caption         = "Cancel"
Height          = 315
Left            = 2580
TabIndex       = 3
Top             = 2475
Width           = 1545

```

End

Begin CommandButton btnOpen

```

Caption         = "&Open"
Default         = -1 'True
Height          = 315
Left            = 465
TabIndex       = 2
Top             = 2475
Width           = 1545

```

End

Begin ListBox VideoList

```

Height          = 1785
Left            = 135
TabIndex       = 1
Top             = 480
Width           = 4305

```

End

Begin Label lblVideoFiles

```

Caption         = "Video &Files:"
Height          = 270
Left            = 210
TabIndex       = 0
Top             = 135
Width           = 1125

```

265

5,832,171

266

OPENVIDE.FRM - 2

End  
End

Sync File

File

<b>Basic Information</b>		<b>Frame List:</b>
Transcript File: <input type="text"/>		FrameList
Starting Page: <input type="text"/>	Lines per Page: <input type="text"/>	
Number of lines: <input type="text"/>	Number of Groups: <input type="text"/>	
Deposition Name: <input type="text"/>		

<b>VideoFileArray</b>	Number of Video Files: <input type="text"/>	<b>Line Positions:</b>
Group/Name:		LinePositions
VideoGroupAndName		
Length (Frames/Millisecs):	Transcript Line Range:	
VideoLength	VideoLineRange	

[Navigation Icons]

syncfile.bmp

SYNCFILE.FRM - 1

VERSION 2.00

Begin Form SyncFile

```

BorderStyle   = 1 'Fixed Single
Caption       = "Sync File"
ClientHeight  = 4755
ClientLeft    = 720
ClientTop     = 1800
ClientWidth   = 6915
ControlBox    = 0 'False
Height        = 5445
Left          = 660
LinkTopic     = "Form1"
MaxButton     = 0 'False
ScaleHeight   = 4755
ScaleWidth    = 6915
Top           = 1170
Width         = 7035

```

Begin MMControl Player

```

Height        = 330
Left          = 5220
TabIndex      = 26
Top           = 4620
Visible       = 0 'False
Width         = 3540

```

End

Begin ListBox LinePositions

```

Height        = 1980
Left          = 5265
TabIndex      = 0
Top           = 2670
Width         = 1515

```

End

Begin ListBox FrameList

```

Height        = 1590
Left          = 5295
TabIndex      = 1
Top           = 465
Width         = 1515

```

End

Begin Frame VideoFilesArray

```

Caption       = "VideoFilesArray"
Height        = 2550
Left          = 45
TabIndex      = 15
Top           = 2130
Width         = 5085

```

Begin ListBox VideoLineRange

```

Height        = 810
Left          = 2700
TabIndex      = 21

```

SYNCFILE.FRM - 2

```

        Top            = 1650
        Width          = 2265
    End
    Begin ListBox VideoLength
        Height         = 810
        Left           = 135
        TabIndex       = 19
        Top            = 1665
        Width          = 2265
    End
    Begin ListBox VideoGroupAndName
        Height         = 810
        Left           = 120
        TabIndex       = 18
        Top            = 510
        Width          = 4860
    End
    Begin Label lblVideoFiles
        Caption        = "Number of Video Files:"
        Height         = 285
        Left           = 2055
        TabIndex       = 7
        Top            = 180
        Width          = 1950
    End
    Begin Label txtVideoFiles
        BorderStyle     = 1 'Fixed Single
        Height         = 300
        Left           = 4125
        TabIndex       = 10
        Top            = 150
        Width          = 450
    End
    Begin Label lblLineRange
        Caption        = "Transcript Line Range:"
        Height         = 210
        Left           = 2745
        TabIndex       = 22
        Top            = 1395
        Width          = 2040
    End
    Begin Label lblVideoLength
        Caption        = "Length (Frames/Millisecs):"
        Height         = 210
        Left           = 150
        TabIndex       = 20
        Top            = 1395
        Width          = 2355
    End
    Begin Label lblVideoGroupAndName

```

SYNCFILE.FRM - 3

```

        Caption      = "Group/Name:"
        Height       = 240
        Left         = 120
        TabIndex     = 17
        Top          = 285
        Width        = 1380
    End
End
Begin Frame BasicInfo
    Caption      = "Basic Information"
    Height       = 1995
    Left         = 60
    TabIndex     = 2
    Top          = 75
    Width        = 5070
    Begin Label lblNumGroups
        Caption      = "Number of Groups:"
        Height       = 285
        Left         = 2445
        TabIndex     = 16
        Top          = 1200
        Width        = 1605
    End
    Begin Label txtNumGroups
        BorderStyle  = 1 'Fixed Single
        Height       = 300
        Left         = 4155
        TabIndex     = 23
        Top          = 1140
        Width        = 585
    End
    Begin Label txtNumLines
        BorderStyle  = 1 'Fixed Single
        Height       = 300
        Left         = 1665
        TabIndex     = 14
        Top          = 1155
        Width        = 585
    End
    Begin Label lblTotalLines
        Caption      = "Number of lines:"
        Height       = 285
        Left         = 165
        TabIndex     = 13
        Top          = 1170
        Width        = 1455
    End
    Begin Label txtDeposition
        BorderStyle  = 1 'Fixed Single
        Height       = 285

```



SYNCFILE.FRM - 4

```

      Left      = 1665
      TabIndex  = 12
      Top       = 1530
      Width     = 3285
End
Begin Label lblDeposition
      Caption   = "Deposition Name:"
      Height    = 270
      Left      = 105
      TabIndex  = 11
      Top       = 1560
      Width     = 1515
End
Begin Label txtLinesPerPage
      BorderStyle = 1 'Fixed Single
      Height      = 300
      Left        = 3690
      TabIndex    = 9
      Top         = 750
      Width       = 585
End
Begin Label lblLinesPerPage
      Caption   = "Lines per Page:"
      Height    = 285
      Left      = 2250
      TabIndex  = 8
      Top       = 780
      Width     = 1350
End
Begin Label txtStartingPage
      BorderStyle = 1 'Fixed Single
      Height      = 300
      Left        = 1470
      TabIndex    = 6
      Top         = 750
      Width       = 585
End
Begin Label lblStartingPage
      Caption   = "Starting Page:"
      Height    = 285
      Left      = 180
      TabIndex  = 5
      Top       = 780
      Width     = 1290
End
Begin Label txtTransFile
      BorderStyle = 1 'Fixed Single
      Height      = 285
      Left        = 1590
      TabIndex    = 4

```

SYNCFIL.FRM - 5

```

        Top          = 330
        Width        = 3285
    End
    Begin Label lblTransFile
        Caption       = "Transcript File:"
        Height        = 270
        Left          = 120
        TabIndex      = 3
        Top           = 330
        Width         = 1395
    End
End
Begin Label Label1
    Caption       = "Line Positions:"
    Height        = 270
    Left          = 5250
    TabIndex      = 24
    Top           = 2295
    Width         = 1620
End
Begin Label lblFrameList
    Caption       = "Frame List:"
    Height        = 270
    Left          = 5265
    TabIndex      = 25
    Top           = 165
    Width         = 1620
End
Begin Menu IDM_FILE
    Caption       = "&File"
    Begin Menu IDM_FILE_GETDATA
        Caption   = "&Get Data"
    End
    Begin Menu IDM_FILE_SEP3
        Caption   = "- "
    End
    Begin Menu IDM_FILE_READTVI
        Caption   = "Read &TVI"
    End
    Begin Menu IDM_FILE_UPDATEDEPO
        Caption   = "&Update Deposition"
    End
    Begin Menu IDM_FILE_SEP1
        Caption   = "- "
    End
    Begin Menu IDM_FILE_EXIT
        Caption   = "E&xit"
    End
End
End
End

```

Transcript Information

File Information

Filename:

Lines per Page:  Starting Page Number:

Line Information

Total Lines:

transinf.bmp

TRANSINF.FRM - 1

VERSION 2.00

Begin Form TranscriptInfo

```

BorderStyle      = 3  'Fixed Double
Caption           = "Transcript Information"
ClientHeight      = 3180
ClientLeft        = 1110
ClientTop         = 1635
ClientWidth       = 5400
ControlBox        = 0  'False
Height            = 3585
Left              = 1050
LinkTopic         = "Form2"
MaxButton         = 0  'False
MinButton         = 0  'False
ScaleHeight       = 3180
ScaleWidth        = 5400
Top               = 1290
Width             = 5520

```

Begin Frame FileInfo

```

Caption           = "File Information"
Height            = 1575
Left              = 120
TabIndex          = 0
Top               = 105
Width             = 5175

```

Begin TextBox txtFilename

```

Height            = 285
Left              = 120
TabIndex          = 3
Top               = 690
Width             = 4860

```

End

Begin CommandButton btnBrowse

```

Caption           = "&Browse..."
Height            = 350
Left              = 3840
TabIndex          = 2
Top               = 240
Width             = 1110

```

End

Begin TextBox txtStartingPage

```

Height            = 285
Left              = 4380
TabIndex          = 7
Top               = 1095
Width             = 525

```

End

Begin TextBox txtLinesPerPage

```

Height            = 285
Left              = 1610

```

TRANSINF.FRM - 2

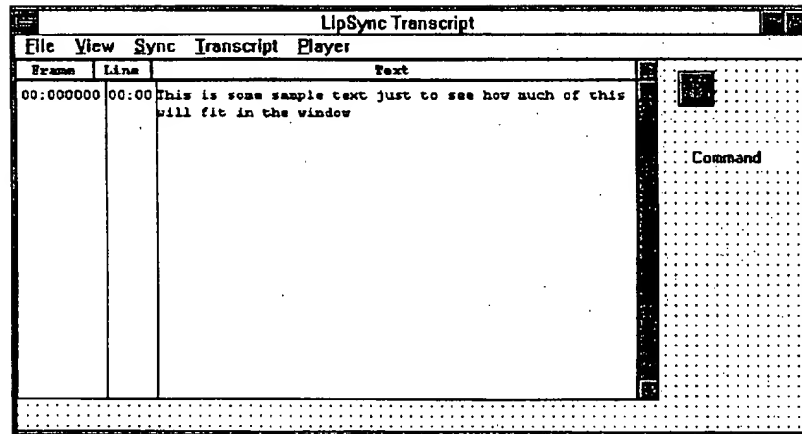
```

        TabIndex      = 5
        Top           = 1095
        Width         = 525
    End
    Begin Label lblStartingPage
        Caption       = "Starting &Page Number:"
        Height        = 195
        Left          = 2325
        TabIndex      = 6
        Top           = 1155
        Width         = 1995
    End
    Begin Label lblLinesPerPage
        Caption       = "&Lines per Page:"
        Height        = 255
        Left          = 165
        TabIndex      = 4
        Top           = 1140
        Width         = 1410
    End
    Begin Label lblFilename
        Caption       = "&Filename:"
        Height        = 225
        Left          = 180
        TabIndex      = 1
        Top           = 360
        Width         = 960
    End
End
Begin Frame LineInfo
    Caption       = "Line Information"
    Height        = 690
    Left          = 105
    TabIndex      = 8
    Top           = 1815
    Width         = 5190
    Begin CommandButton btnScan
        Caption     = "&Scan File"
        Height      = 350
        Left        = 3795
        TabIndex    = 11
        Top         = 255
        Width       = 1215
    End
    Begin Label txtNumLines
        Height      = 255
        Left        = 1260
        TabIndex    = 10
        Top         = 345
        Width       = 2415

```

TRANSINF.FRM - 3

```
End
Begin Label lblNumLines
    Caption      = "Total Lines:"
    Height       = 255
    Left         = 150
    TabIndex     = 9
    Top          = 345
    Width        = 1140
End
End
Begin CommonDialog Cdlg
    Left         = 1680
    Top          = 4905
End
Begin CommandButton btnCancel
    Cancel       = -1 'True
    Caption      = "Cancel"
    Height       = 350
    Left         = 3015
    TabIndex     = 13
    Top          = 2685
    Width        = 1275
End
Begin CommandButton btnOk
    Caption      = "OK"
    Default      = -1 'True
    Height       = 350
    Left         = 1185
    TabIndex     = 12
    Top          = 2700
    Width        = 1215
End
End
```



trnsrpt.bmp

TRANSCRIPT.FRM - 1

VERSION 2.00

Begin Form Transcript

```

Caption      = "LipSync Transcript"
ClientHeight = 2595
ClientLeft   = 45
ClientTop    = 4530
ClientWidth  = 9495
ControlBox   = 0 'False
Height       = 3285
Icon         = (Icon)
KeyPreview   = -1 'True
Left         = -15
LinkTopic    = "Form2"
ScaleHeight  = 2595
ScaleWidth   = 9495
Top          = 3900
Width        = 9615

```

Begin Timer LinkTimer

```

Left = 7845
Top  = 135

```

End

Begin TextBox txtFrame

```

FontBold      = 0 'False
FontItalic    = 0 'False
FontName      = "Courier New"
FontSize      = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height        = 3775
Left          = 0
MultiLine     = -1 'True
TabIndex      = 3
TabStop       = 0 'False
Text          = "00:000000"
Top           = 240
Width         = 1075

```

End

Begin TextBox txtLine

```

FontBold      = 0 'False
FontItalic    = 0 'False
FontName      = "Courier New"
FontSize      = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height        = 3775
Left          = 925
MultiLine     = -1 'True
TabIndex      = 0
TabStop       = 0 'False
Text          = "000:00"

```



TRANSCRIPT.FRM - 2

```

=
    Top          240
    Width        = 750
End
Begin VScrollBar TransPos
    Height       = 4020
    Left        = 7365
    TabIndex     = 6
    Top         = 0
    Width       = 240
End
Begin TextBox txtText
    FontBold     = 0 'False
    FontItalic   = 0 'False
    FontName     = "Courier New"
    FontSize     = 8.25
    FontStrikethru = 0 'False
    FontUnderline = 0 'False
    Height      = 3775
    HideSelection = 0 'False
    Left       = 1600
    MultiLine  = -1 'True
    TabIndex   = 5
    TabStop    = 0 'False
    Text       = "This is some sample text just to see how much of this
    Top       = 240
    Width    = 5755
End
Begin Label txtCommand
    Caption     = "Command"
    Height     = 240
    Left      = 7995
    TabIndex  = 8
    Top      = 1050
    Visible   = 0 'False
    Width    = 1215
End
Begin Label lblText
    Alignment   = 2 'Center
    BorderStyle = 1 'Fixed Single
    Caption     = "Text"
    FontBold    = -1 'True
    FontItalic  = 0 'False
    FontName    = "Courier New"
    FontSize    = 8.25
    FontStrikethru = 0 'False
    FontUnderline = 0 'False
    Height     = 240
    Left      = 1600
    TabIndex   = 4
    Top       = 0

```

TRNSCRPT.FRM - 3

```

        Width          = 5755
    End
    Begin Label lblFrame
        Alignment      = 2 'Center
        BorderStyle    = 1 'Fixed Single
        Caption        = "Frame"
        FontBold       = -1 'True
        FontItalic     = 0 'False
        FontName       = "Courier New"
        FontSize       = 8.25
        FontStrikethru = 0 'False
        FontUnderline  = 0 'False
        Height        = 240
        Left          = 0
        TabIndex      = 2
        Top           = 0
        Width         = 925
    End
    Begin Label lblLine
        Alignment      = 2 'Center
        BorderStyle    = 1 'Fixed Single
        Caption        = "Line"
        FontBold       = -1 'True
        FontItalic     = 0 'False
        FontName       = "Courier New"
        FontSize       = 8.25
        FontStrikethru = 0 'False
        FontUnderline  = 0 'False
        Height        = 240
        Left          = 925
        TabIndex      = 1
        Top           = 0
        Width         = 675
    End
    Begin Label nCurLine
        Height        = 405
        Left          = 0
        TabIndex      = 7
        Top           = 0
        Visible       = 0 'False
        Width         = 1035
    End
    Begin Menu IDM_FILE
        Caption      = "&File"
        Begin Menu IDM_FILE_VALIDATE
            Caption  = "&Validate"
        End
        Begin Menu IDM_FILE_SEP1
            Caption = "-"
        End
    End

```

```

TRANSCRIPT.FRM - 4      FILE

      Begin Menu IDM_I      _SAVE
        Caption            =    "&Save"
      End
      Begin Menu IDM_FILE_SAVEAS
        Caption            =    "Save &As..."
      End
      Begin Menu IDM_FILE_SEP2
        Caption            =    "-"
      End
      Begin Menu IDM_FILE_DONE
        Caption            =    "&Return to Main Window"
      End
    End
  Begin Menu IDM_VIEW
    Caption                =    "&View"
    Begin Menu IDM_VIEW_ALL
      Caption              =    "&All"
    End
    Begin Menu IDM_VIEW_TEXTONLY
      Caption              =    "&Text Only"
    End
    Begin Menu IDM_SEP1
      Caption              =    "-"
    End
    Begin Menu IDM_VIEW_LINE
      Caption              =    "Transcript &Line"
    End
    Begin Menu IDM_VIEW_FRAME
      Caption              =    "&Video Frame"
    End
  End
Begin Menu IDM_SYNC
  Caption                  =    "&Sync"
  Begin Menu IDM_SYNC_SYNC
    Caption                =    "&Sync Current Line (Enter)"
  End
  Begin Menu IDM_SYNC_UNSYNC
    Caption                =    "&Unsync (Backspace)"
  End
  Begin Menu IDM_SYNC_SEP1
    Caption                =    "-"
  End
  Begin Menu IDM_SYNC_SETLINERANGE
    Caption                =    "Set Line &Range..."
  End
  Begin Menu IDM_SYNC_SEP2
    Caption                =    "-"
  End
  Begin Menu IDM_SYNC_LINK
    Caption                =    "Simulate &Link"
  End
End

```

TRANSCRIPT.FRM - 5

```

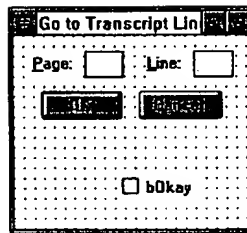
End
End
Begin Menu IDM_TRANS
  Caption      = "&Transcript"
  Begin Menu IDM_TRANS_GOTOLINE
    Caption    = "Go to &Line..."
  End
  Begin Menu IDM_TRANS_MATCHVIDEO
    Caption    = "&Match Transcript to Video Frame"
  End
  Begin Menu IDM_TRANS_SEP1
    Caption    = "-"
  End
  Begin Menu IDM_TRANS_FIND
    Caption    = "&Find Text..."
  End
  Begin Menu IDM_TRANS_SEP2
    Caption    = "-"
  End
  Begin Menu IDM_TRANS_FINDGAP
    Caption    = "Find Next Frame &Gap"
  End
  Begin Menu IDM_TRANS_NEXTBOUND
    Caption    = "Find &Next File Boundary"
  End
  Begin Menu IDM_TRANS_PREVBOUND
    Caption    = "Find &Previous File Boundary"
  End
End
Begin Menu IDM_PLAYER
  Caption      = "&Player"
  Begin Menu IDM_PLAYER_SHOW
    Caption    = "&Hide"
  End
  Begin Menu IDM_PLAYER_SEP1
    Caption    = "-"
  End
  Begin Menu IDM_PLAYER_OPEN
    Caption    = "&Open..."
  End
  Begin Menu IDM_PLAYER_CLOSE
    Caption    = "&Close"
  End
  Begin Menu IDM_PLAYER_SEP2
    Caption    = "-"
  End
  Begin Menu IDM_PLAYER_PLAY
    Caption    = "&Play"
    Shortcut   = ^p
  End
End

```

TRANSCRIPT.FRM - 6

LAY

```
Begin Menu IDM_P. ER_STOP
  Caption      = "&Stop"
  Shortcut     = ^S
End
Begin Menu IDM_PLAYER_REFRESH
  Caption      = "&Refresh"
  Shortcut     = ^R
End
Begin Menu IDM_PLAYER_SEP3
  Caption      = "- "
End
Begin Menu IDM_PLAYER_GOTOFRAME
  Caption      = "Go to &Frame..."
End
Begin Menu IDM_PLAYER_MATCH
  Caption      = "&Match Video to Current Line"
End
End
End
```



trnsgoto.bmp

TRNSGOTO.FRM - 1

VERSION 2.00

Begin Form TransGoto

```

BorderStyle = 3 'Fixed Double
Caption = "Go to Transcript Line"
ClientHeight = 1110
ClientLeft = 2820
ClientTop = 4800
ClientWidth = 2805
ClipControls = 0 'False
ControlBox = 0 'False
Height = 1515
Left = 2760
LinkTopic = "Form1"
MaxButton = 0 'False
MinButton = 0 'False
ScaleHeight = 1110
ScaleWidth = 2805
Top = 4455
Width = 2925

```

Begin TextBox txtLine

```

FontBold = 0 'False
FontItalic = 0 'False
FontName = "Arial"
FontSize = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height = 315
Left = 2145
TabIndex = 3
Top = 180
Width = 465

```

End

Begin CheckBox bOkay

```

Caption = "bOkay"
Height = 315
Left = 1290
TabIndex = 6
Top = 1620
Visible = 0 'False
Width = 975

```

End

Begin CommandButton btnCancel

```

Cancel = -1 'True
Caption = "Cancel"
Height = 330
Left = 1500
TabIndex = 5
Top = 660
Width = 975

```

End


*AP*  
*9-24-98* TRNSGOTO.FRM - 2      *btnOK*

```

Begin CommandButton btnOK
  Caption      = "OK"
  Default      = -1 'True
  Height       = 330
  Left         = 330
  TabIndex     = 4
  Top          = 660
  Width        = 975
End
Begin TextBox txtPage
  FontBold     = 0 'False
  FontItalic   = 0 'False
  FontName     = "Arial"
  FontSize     = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  Height       = 315
  Left         = 855
  TabIndex     = 1
  Top          = 180
  Width        = 465
End
Begin Label lblLine
  Caption      = "&Line:"
  Height       = 300
  Left         = 1590
  TabIndex     = 2
  Top          = 225
  Width        = 495
End
Begin Label lblPage
  Caption      = "&Page:"
  Height       = 300
  Left         = 225
  TabIndex     = 0
  Top          = 225
  Width        = 570
End
End

```



TVI State			
sTransFilename		sExhibitFilename	sTranscrip
nTransLinesPerPage		nExhibitFileGroup	
nTransStartingPage		sSyncMediaName	
sExhibitName		sSyncFilename	
iExhibitFrame		nSyncFileGroup	
iFrameList		nSyncStartLine	
iTransLines		nSyncEndLine	
iSyncStartFrame		iSyncEndFrame	

tvistate.bmp

TVISTATE.FRM - 1

VERSION 2.00

Begin Form TVI

```

BorderStyle      = 1  'Fixed Single
Caption          = "TVI State"
ClientHeight     = 3855
ClientLeft       = 1740
ClientTop        = 1965
ClientWidth      = 5670
ControlBox       = 0  'False
Height           = 4260
Icon             = (Icon)
Left             = 1680
LinkTopic        = "Form1"
MaxButton        = 0  'False
ScaleHeight      = 3855
ScaleWidth       = 5670
Top              = 1620
Visible          = 0  'False
Width            = 5790

```

Begin ListBox sTranscripts

```

Height           = 1005
Left             = 4695
TabIndex         = 16
Top              = 180
Width            = 885

```

End

Begin ListBox lSyncEndFrame

```

FontBold         = 0  'False
FontItalic       = 0  'False
FontName         = "Arial"
FontSize         = 8.25
FontStrikethru   = 0  'False
FontUnderline    = 0  'False
Height           = 450
Left             = 2580
TabIndex         = 15
Top              = 3285
Width            = 1920

```

End

Begin ListBox lSyncStartFrame

```

FontBold         = 0  'False
FontItalic       = 0  'False
FontName         = "Arial"
FontSize         = 8.25
FontStrikethru   = 0  'False
FontUnderline    = 0  'False
Height           = 450
Left             = 135
TabIndex         = 14
Top              = 3300

```

pg 140

TVISTATE.FRM - 2

```

        Width          = 1920
    End
    Begin ListBox lTransLines
        FontBold         = 0 'False
        FontItalic        = 0 'False
        FontName          = "Arial"
        FontSize          = 8.25
        FontStrikethru    = 0 'False
        FontUnderline     = 0 'False
        Height            = 450
        Left              = 135
        TabIndex          = 1
        Top               = 2760
        Width             = 1920
    End
    Begin ListBox lFrameList
        FontBold         = 0 'False
        FontItalic        = 0 'False
        FontName          = "Arial"
        FontSize          = 8.25
        FontStrikethru    = 0 'False
        FontUnderline     = 0 'False
        Height            = 450
        Left              = 120
        TabIndex          = 4
        Top               = 2205
        Width             = 1920
    End
    Begin ListBox nSyncEndLine
        FontBold         = 0 'False
        FontItalic        = 0 'False
        FontName          = "Arial"
        FontSize          = 8.25
        FontStrikethru    = 0 'False
        FontUnderline     = 0 'False
        Height            = 450
        Left              = 2580
        TabIndex          = 9
        Top               = 2760
        Width             = 1920
    End
    Begin ListBox nSyncStartLine
        FontBold         = 0 'False
        FontItalic        = 0 'False
        FontName          = "Arial"
        FontSize          = 8.25
        FontStrikethru    = 0 'False
        FontUnderline     = 0 'False
        Height            = 450
        Left              = 2595

```

HP  
12/24/98  
TVISTATE.FRM - 3

```

TabIndex      13
Top           = 2220
Width        = 1920
End
Begin ListBox nSyncFileGroup
FontBold      = 0 'False
FontItalic    = 0 'False
FontName      = "Arial"
FontSize      = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height        = 450
Left          = 2610
TabIndex      = 12
Top           = 1710
Width        = 1920
End
Begin ListBox sSyncFilename
FontBold      = 0 'False
FontItalic    = 0 'False
FontName      = "Arial"
FontSize      = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height        = 450
Left          = 2595
TabIndex      = 11
Top           = 1170
Width        = 1920
End
Begin ListBox lExhibitFrame
FontBold      = 0 'False
FontItalic    = 0 'False
FontName      = "Arial"
FontSize      = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height        = 450
Left          = 120
TabIndex      = 8
Top           = 1710
Width        = 1920
End
Begin ListBox sExhibitName
FontBold      = 0 'False
FontItalic    = 0 'False
FontName      = "Arial"
FontSize      = 8.25
FontStrikethru = 0 'False
FontUnderline = 0 'False

```

TVISTATE.FRM - 4

*XP*  
*24.98*

```

Height      = 450
Left        = 120
TabIndex    = 7
Top         = 1200
Width       = 1920
End
Begin CommonDialog Cdlg
  Left      = 2205
  Top       = 135
End
Begin Label sSyncMediaName
  BorderStyle = 1 'Fixed Single
  Caption     = "sSyncMediaName"
  FontBold    = 0 'False
  FontItalic  = 0 'False
  FontName    = "Arial"
  FontSize    = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  Height      = 270
  Left        = 2865
  TabIndex    = 10
  Top         = 825
  Width       = 1620
End
Begin Label nExhibitFileGroup
  BorderStyle = 1 'Fixed Single
  Caption     = "nExhibitFileGroup"
  FontBold    = 0 'False
  FontItalic  = 0 'False
  FontName    = "Arial"
  FontSize    = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  Height      = 270
  Left        = 2880
  TabIndex    = 6
  Top         = 435
  Width       = 1620
End
Begin Label sExhibitFilename
  BorderStyle = 1 'Fixed Single
  Caption     = "sExhibitFilename"
  FontBold    = 0 'False
  FontItalic  = 0 'False
  FontName    = "Arial"
  FontSize    = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  Height      = 270

```

TVISTATE.FRM - 5

*Handwritten:*  
 224.98

```

Left          = 2880
TabIndex      = 5
Top           = 75
Width         = 1620
End
Begin Label nTransStartingPage
  BorderStyle  = 1 'Fixed Single
  Caption      = "nTransStartingPage"
  FontBold     = 0 'False
  FontItalic   = 0 'False
  FontName     = "Arial"
  FontSize     = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  Height       = 300
  Left         = 135
  TabIndex     = 3
  Top          = 855
  Width        = 1950
End
Begin Label nTransLinesPerPage
  BorderStyle  = 1 'Fixed Single
  Caption      = "nTransLinesPerPage"
  FontBold     = 0 'False
  FontItalic   = 0 'False
  FontName     = "Arial"
  FontSize     = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  Height       = 315
  Left         = 135
  TabIndex     = 2
  Top          = 450
  Width        = 1920
End
Begin Label sTransFilename
  BorderStyle  = 1 'Fixed Single
  Caption      = "sTransFilename"
  FontBold     = 0 'False
  FontItalic   = 0 'False
  FontName     = "Arial"
  FontSize     = 8.25
  FontStrikethru = 0 'False
  FontUnderline = 0 'False
  Height       = 270
  Left         = 150
  TabIndex     = 0
  Top          = 105
  Width        = 1920
End

```

319

5,832,171

320

TVISTATE.FRM - 6

End





VERIFY.FRM - 1

VERSION 2.00

Begin Form Verify

```

BorderStyle = 3 'Fixed Double
Caption      = "Verifying Sync Information..."
ClientHeight = 5895
ClientLeft   = 240
ClientTop    = 570
ClientWidth  = 9030
ControlBox   = 0 'False
Height       = 6300
Left         = 180
LinkTopic    = "Form1"
MaxButton    = 0 'False
MinButton    = 0 'False
ScaleHeight  = 5895
ScaleWidth   = 9030
Top          = 225
Width        = 9150

```

Begin CommandButton btnCancel

```

Caption      = "Return to Main Window"
Enabled      = 0 'False
Height       = 315
Left         = 1305
TabIndex     = 29
Top          = 6030
Width        = 2655

```

End

Begin PictureBox P

```

BorderStyle = 0 'None
Height       = 480
Index        = 6
Left         = 5205
Picture      = (Bitmap)
ScaleHeight  = 480
ScaleWidth   = 975
TabIndex     = 24
TabStop      = 0 'False
Top          = 5040
Width        = 975

```

End

Begin PictureBox P

```

BorderStyle = 0 'None
Height       = 480
Index        = 5
Left         = 5205
Picture      = (Bitmap)
ScaleHeight  = 480
ScaleWidth   = 975
TabIndex     = 23
TabStop      = 0 'False

```

VERIFY.FRM - 2

*RP*  
*9-24-98*

```

Top          3765
Width        = 975
End
Begin PictureBox PX
  BorderStyle = 0 'None
  Height      = 480
  Left       = 1920
  Picture     = (Bitmap)
  ScaleHeight = 480
  ScaleWidth  = 975
  TabIndex   = 2
  TabStop    = 0 'False
  Top        = 6225
  Visible    = 0 'False
  Width      = 975
End
Begin PictureBox POK
  BorderStyle = 0 'None
  Height      = 480
  Left       = 615
  Picture     = (Bitmap)
  ScaleHeight = 480
  ScaleWidth  = 975
  TabIndex   = 8
  TabStop    = 0 'False
  Top        = 6195
  Visible    = 0 'False
  Width      = 975
End
Begin PictureBox P
  BorderStyle = 0 'None
  Height      = 480
  Index       = 4
  Left       = 5205
  Picture     = (Bitmap)
  ScaleHeight = 480
  ScaleWidth  = 975
  TabIndex   = 12
  TabStop    = 0 'False
  Top        = 2925
  Width      = 975
End
Begin PictureBox P
  BorderStyle = 0 'None
  Height      = 480
  Index       = 3
  Left       = 5205
  Picture     = (Bitmap)
  ScaleHeight = 480
  ScaleWidth  = 975

```

VERIFY.FRM - 3

TabIndex = 16  
 TabStop = 0 'False  
 Top = 2190  
 Width = 975

End

Begin PictureBox P

BorderStyle = 0 'None  
 Height = 480  
 Index = 1  
 Left = 5205  
 Picture = (Bitmap)  
 ScaleHeight = 480  
 ScaleWidth = 975  
 TabIndex = 19  
 TabStop = 0 'False  
 Top = 990  
 Width = 975

End

Begin Timer WaitTimer

Left = 3915  
 Top = -1000

End

Begin CheckBox bValid

Caption = "Valid"  
 Height = 285  
 Left = 6645  
 TabIndex = 22  
 TabStop = 0 'False  
 Top = 6225  
 Visible = 0 'False  
 Width = 1560

End

Begin CommandButton btnOk

Cancel = -1 'True  
 Caption = "Continue"  
 Default = -1 'True  
 Height = 330  
 Left = 5625  
 TabIndex = 0  
 Top = 6030  
 Width = 1800

End

Begin PictureBox P

BorderStyle = 0 'None  
 Height = 480  
 Index = 0  
 Left = 5205  
 Picture = (Bitmap)  
 ScaleHeight = 480  
 ScaleWidth = 975

VERIFY.FRM - 4

*Handwritten: 1.2 + 68*

```

TabIndex      = 14
TabStop       = 0 'False
Top           = 375
Width         = 975
End
Begin PictureBox P
BorderStyle   = 0 'None
Height        = 435
Index         = 2
Left          = 5205
Picture       = (Bitmap)
ScaleHeight   = 435
ScaleWidth    = 975
TabIndex      = 18
TabStop       = 0 'False
Top           = 1635
Width         = 975
End
Begin Label R
Caption        = "Sync Video: Validate to find frames that are out of o
Height         = 675
Index         = 4
Left          = 6300
TabIndex      = 28
Top           = 2940
Width         = 2670
End
Begin Label R
Caption        = "Sync Video: Validate to find frames that are out of o
Height         = 675
Index         = 3
Left          = 6300
TabIndex      = 27
Top           = 2175
Width         = 2670
End
Begin Label V
Caption        = "Video File Line Ranges do not Overlap"
FontBold      = -1 'True
FontItalic    = 0 'False
FontName      = "MS Sans Serif"
FontSize      = 13.5
FontStrikethru = 0 'False
FontUnderline = 0 'False
Height        = 735
Index         = 4
Left          = 45
TabIndex      = 26
Top           = 2940
Width         = 4710

```

VERIFY.FRM - 5

```

End
Begin Label V
    Caption      = "Sync Frames are in Ascending Order within each Video"
    FontBold     = -1 'True
    FontItalic   = 0  'False
    FontName     = "MS Sans Serif"
    FontSize     = 13.5
    FontStrikethru = 0  'False
    FontUnderline = 0  'False
    Height       = 735
    Index        = 3
    Left         = 60
    TabIndex     = 25
    Top          = 2145
    Width        = 4710
End
Begin Line LH
    BorderWidth  = 2
    Index        = 2
    X1           = 30
    X2           = 9030
    Y1           = 1620
    Y2           = 1620
End
Begin Line LH
    BorderWidth  = 2
    Index        = 7
    X1           = 15
    X2           = 9045
    Y1           = 5895
    Y2           = 5895
End
Begin Line LH
    BorderWidth  = 2
    Index        = 6
    X1           = 0
    X2           = 9030
    Y1           = 4980
    Y2           = 4980
End
Begin Line LH
    BorderWidth  = 2
    Index        = 5
    X1           = 30
    X2           = 9060
    Y1           = 3720
    Y2           = 3720
End
Begin Label R
    Caption      = "Video Files List: Change CD ROM Numbers so that there

```

VERIFY.FRM - 6

Height = 810  
 Index = 6  
 Left = 6300  
 TabIndex = 21  
 Top = 5025  
 Width = 2670  
 End  
 Begin Line LH  
 BorderWidth = 2  
 Index = 4  
 X1 = 0  
 X2 = 9015  
 Y1 = 2880  
 Y2 = 2895  
 End  
 Begin Label R  
 Caption = "Video Files List: Use Move Up and Move Down buttons t  
 Height = 1260  
 Index = 5  
 Left = 6300  
 TabIndex = 20  
 Top = 3765  
 Width = 2670  
 End  
 Begin Line LH  
 BorderWidth = 2  
 Index = 3  
 X1 = 15  
 X2 = 9015  
 Y1 = 2115  
 Y2 = 2115  
 End  
 Begin Label R  
 Caption = "Sync Video: Find gaps and sync those transcript lines  
 Height = 435  
 Index = 2  
 Left = 6285  
 TabIndex = 17  
 Top = 1650  
 Width = 2550  
 End  
 Begin Label R  
 Caption = "Sync Video: Open all video files. (Length is determin  
 Height = 585  
 Index = 1  
 Left = 6315  
 TabIndex = 1  
 Top = 990  
 Width = 2670  
 End

VERIFY.FRM - 7

```

Begin Label V
  Caption      = "Video File Lengths are Set"
  FontBold     = -1 'True
  FontItalic   = 0  'False
  FontName     = "MS Sans Serif"
  FontSize     = 13.5
  FontStrikethru = 0  'False
  FontUnderline = 0  'False
  Height       = 450
  Index        = 1
  Left         = 60
  TabIndex     = 13
  Top          = 1035
  Width        = 4710
End
Begin Line LH
  BorderWidth  = 2
  Index        = 1
  X1           = 30
  X2           = 9030
  Y1           = 960
  Y2           = 960
End
Begin Label R
  Caption      = "Transcript Information: Fill in all information and s
  Height       = 600
  Index        = 0
  Left         = 6300
  TabIndex     = 15
  Top          = 345
  Width        = 2670
End
Begin Line LV2
  BorderWidth  = 2
  X1           = 6255
  X2           = 6255
  Y1           = 0
  Y2           = 5880
End
Begin Line LV1
  BorderWidth  = 2
  X1           = 5175
  X2           = 5175
  Y1           = 0
  Y2           = 5880
End
Begin Label V
  Caption      = "Transcript has no Sync Frame Gaps"
  FontBold     = -1 'True
  FontItalic   = 0  'False

```

VERIFY.FRM - 8

HP  
7-24-98

```

FontName      "MS Sans Serif"
FontSize      = 13.5
FontStrikethru = 0 'False
FontUnderline  = 0 'False
Height        = 405
Index         = 2
Left          = 30
TabIndex      = 11
Top           = 1680
Width         = 5115
End
Begin Label V
Caption       = "CD ROM Numbers have No Gaps and are in Ascending Orde
FontBold      = -1 'True
FontItalic    = 0 'False
FontName      = "MS Sans Serif"
FontSize      = 13.5
FontStrikethru = 0 'False
FontUnderline  = 0 'False
Height        = 750
Index         = 6
Left          = 45
TabIndex      = 10
Top           = 5055
Width         = 4965
End
Begin Label V
Caption       = "Video File Line Ranges are in Ascending Order"
FontBold      = -1 'True
FontItalic    = 0 'False
FontName      = "MS Sans Serif"
FontSize      = 13.5
FontStrikethru = 0 'False
FontUnderline  = 0 'False
Height        = 735
Index         = 5
Left          = 75
TabIndex      = 9
Top           = 3780
Width         = 4710
End
Begin Label V
Caption       = "Transcript Information is Complete"
FontBold      = -1 'True
FontItalic    = 0 'False
FontName      = "MS Sans Serif"
FontSize      = 13.5
FontStrikethru = 0 'False
FontUnderline  = 0 'False
Height        = 405

```



VERIFY.FRM - 9

Index = 0  
Left = 60  
TabIndex = 7  
Top = 405  
Width = 4950

End

Begin Line LH

BorderWidth = 2  
Index = 0  
X1 = 0  
X2 = 9030  
Y1 = 300  
Y2 = 300

End

Begin Label lblRemedy

Caption = "Remedy"  
Height = 195  
Left = 7275  
TabIndex = 5  
Top = 45  
Width = 1215

End

Begin Label lblPassFail

Caption = "Pass/Fail"  
Height = 195  
Left = 5310  
TabIndex = 4  
Top = 60  
Width = 855

End

Begin Label lblValidate

Caption = "Type of Validation"  
Height = 195  
Left = 1680  
TabIndex = 3  
Top = 45  
Width = 1680

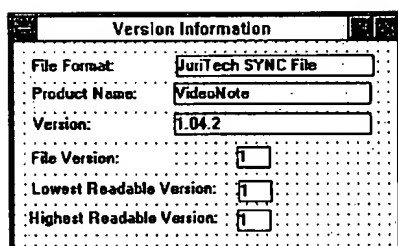
End

Begin Label lblBorder

BorderStyle = 1 'Fixed Single  
Height = 5910  
Left = 0  
TabIndex = 6  
Top = 0  
Width = 9030

End

End



version.bmp

VERSION.FRM - 1

VERSION 2.00

Begin Form Version

```

Caption      = "Version Information"
ClientHeight = 2430
ClientLeft   = 1080
ClientTop    = 1470
ClientWidth  = 4545
Height       = 2835
Left         = 1020
LinkTopic    = "Form2"
ScaleHeight  = 2430
ScaleWidth   = 4545
Top          = 1125
Width        = 4665

```

Begin Label nHiVersion

```

BorderStyle = 1 'Fixed Single
Caption      = "1"
Height       = 255
Left         = 2655
TabIndex     = 11
Top          = 1995
Width        = 405

```

End

Begin Label lblHighestVersion

```

Caption      = "Highest Readable Version:"
Height       = 240
Left         = 165
TabIndex     = 10
Top          = 1980
Width        = 2280

```

End

Begin Label nLoVersion

```

BorderStyle = 1 'Fixed Single
Caption      = "1"
Height       = 255
Left         = 2670
TabIndex     = 9
Top          = 1650
Width        = 405

```

End

Begin Label lblLowestVersion

```

Caption      = "Lowest Readable Version:"
Height       = 240
Left         = 195
TabIndex     = 8
Top          = 1635
Width        = 2280

```

End

Begin Label nFileVersion

```

BorderStyle = 1 'Fixed Single

```

VERSION.FRM - 2

```

Caption      = "1"
Height       = 255
Left         = 2655
TabIndex     = 7
Top          = 1245
Width        = 405
End
Begin Label lblFileVersion
Caption      = "File Version:"
Height       = 240
Left         = 195
TabIndex     = 6
Top          = 1275
Width        = 1650
End
Begin Label sVersion
BorderStyle = 1 'Fixed Single
Caption      = "1.04.2"
Height       = 255
Left         = 1905
TabIndex     = 5
Top          = 855
Width        = 2340
End
Begin Label lblVersion
Caption      = "Version:"
Height       = 240
Left         = 225
TabIndex     = 4
Top          = 870
Width        = 1650
End
Begin Label sFileFormat
BorderStyle = 1 'Fixed Single
Caption      = "JuriTech SYNC File"
Height       = 255
Left         = 1935
TabIndex     = 3
Top          = 165
Width        = 2340
End
Begin Label lblFileFormat
Caption      = "File Format:"
Height       = 240
Left         = 210
TabIndex     = 2
Top          = 180
Width        = 1650
End
Begin Label sProductName

```

VERSION.FRM - 3

```
        BorderStyle      = 1 'Fixed Single
        Caption           = "VideoNote"
        Height            = 255
        Left              = 1905
        TabIndex           = 1
        Top               = 495
        Width             = 2340
    End
    Begin Label lblProductName
        Caption           = "Product Name:"
        Height            = 240
        Left              = 210
        TabIndex           = 0
        Top               = 510
        Width             = 1650
    End
End
```

Video Files List

Deposition Name:

Video Files:

VideoList

Filename:

CD ROM Number:  Line Range:

Video Length:

vidfiles.bmp

VIDFILES.FRM - 1

VERSION 2.00

Begin Form VideoFiles

```

BorderStyle      = 3  'Fixed Double
Caption          = "Video Files List"
ClientHeight     = 4830
ClientLeft       = 1440
ClientTop        = 1800
ClientWidth      = 6315
ControlBox       = 0  'False
Height           = 5235
Icon             = (Icon)
Left             = 1380
LinkTopic        = "Form1"
MaxButton        = 0  'False
MinButton        = 0  'False
ScaleHeight      = 4830
ScaleWidth       = 6315
Top              = 1455
Width            = 6435

```

Begin ListBox LengthList

```

Height          = 420
Left            = 4005
TabIndex        = 20
Top             = 5040
Visible         = 0  'False
Width           = 1335

```

End

Begin ListBox LineList

```

Height          = 420
Left            = 780
TabIndex        = 17
Top             = 5025
Visible         = 0  'False
Width           = 1335

```

End

Begin TextBox txtGroup

```

FontBold        = 0  'False
FontItalic      = 0  'False
FontName        = "Arial"
FontSize        = 8.25
FontStrikethru  = 0  'False
FontUnderline   = 0  'False
Height          = 315
Left            = 1785
TabIndex        = 12
Top             = 3930
Width           = 660

```

End

Begin CommandButton btnCancel

```

Cancel          = -1  'True

```

VIDFILES.FRM - 2

```

Caption      = "Cancel"
Height       = 315
Left         = 1395
TabIndex     = 14
Top          = 4425
Width        = 900
End
Begin CommandButton btnOk
Caption      = "OK"
Default     = -1 'True
Height      = 315
Left        = 195
TabIndex    = 13
Top         = 4425
Width       = 900
End
Begin CommandButton btnBrowse
Caption      = "&Browse..."
Height      = 300
Left        = 4935
TabIndex    = 10
Top         = 3525
Width       = 1215
End
Begin CommandButton btnDelete
Caption      = "De&lete File"
Height      = 300
Left        = 4920
TabIndex    = 7
Top         = 2670
Width       = 1215
End
Begin CommandButton btnAdd
Caption      = "&Add File..."
Height      = 315
Left        = 4905
TabIndex    = 6
Top         = 2175
Width       = 1245
End
Begin CommandButton btnMoveDown
Caption      = "Move &Down"
Height      = 315
Left        = 4905
TabIndex    = 5
Top         = 1350
Width       = 1275
End
Begin CommandButton btnMoveUp
Caption      = "Move &Up"

```



VIDFILES.FRM - 3

```

      Height      = 315
      Left        = 4875
      TabIndex    = 4
      Top         = 885
      Width       = 1305
End
Begin TextBox txtFilename
      FontBold     = 0 'False
      FontItalic   = 0 'False
      FontName     = "Arial"
      FontSize     = 8.25
      FontStrikethru = 0 'False
      FontUnderline = 0 'False
      Height      = 315
      Left        = 1125
      TabIndex    = 9
      Top         = 3540
      Width       = 3615
End
Begin ListBox VideoList
      FontBold     = 0 'False
      FontItalic   = 0 'False
      FontName     = "Courier New"
      FontSize     = 9
      FontStrikethru = 0 'False
      FontUnderline = 0 'False
      Height      = 2505
      Left        = 105
      TabIndex    = 3
      Top         = 795
      Width       = 4635
End
Begin TextBox txtDepositionName
      FontBold     = 0 'False
      FontItalic   = 0 'False
      FontName     = "Arial"
      FontSize     = 8.25
      FontStrikethru = 0 'False
      FontUnderline = 0 'False
      Height      = 315
      Left        = 2055
      TabIndex    = 1
      Top         = 120
      Width       = 4110
End
Begin Label txtLength
      BorderStyle  = 1 'Fixed Single
      FontBold     = 0 'False
      FontItalic   = 0 'False
      FontName     = "Arial"

```

VIDFILES.FRM - 4

```

        FontSize      = 8.25
        FontStrikethru = 0 'False
        FontUnderline  = 0 'False
        Height         = 300
        Left           = 3855
        TabIndex       = 19
        Top            = 4395
        Width          = 2265
    End
    Begin Label lblLength
        Caption      = "Video Length:"
        Height       = 270
        Left         = 2535
        TabIndex     = 18
        Top          = 4425
        Width        = 1215
    End
    Begin Label txtTranscriptLines
        BorderStyle  = 1 'Fixed Single
        FontBold     = 0 'False
        FontItalic   = 0 'False
        FontName     = "Arial"
        FontSize     = 8.25
        FontStrikethru = 0 'False
        FontUnderline = 0 'False
        Height       = 300
        Left         = 3870
        TabIndex     = 16
        Top          = 3960
        Width        = 2235
    End
    Begin Label lblTranscriptLines
        Caption      = "Line Range:"
        Height       = 300
        Left         = 2640
        TabIndex     = 15
        Top          = 4020
        Width        = 1095
    End
    Begin Label lblGroup
        Caption      = "&CD ROM Number:"
        Height       = 255
        Left         = 165
        TabIndex     = 11
        Top          = 3990
        Width        = 1545
    End
    Begin Label lblFilename
        Caption      = "&Filename:"
        Height       = 225

```

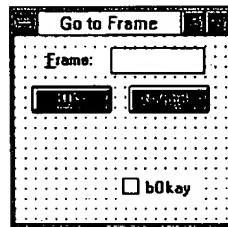
VIDFILES.FRM - 5

```
      Left      = 150
      TabIndex  = 8
      Top       = 3570
      Width     = 915
End
Begin Label lblVideoFiles
      Caption   = "&Video Files:"
      Height    = 255
      Left      = 195
      TabIndex  = 2
      Top       = 495
      Width     = 1170
End
Begin Label lblDepositionName
      Caption   = "&Deposition Name:"
      Height    = 255
      Left      = 165
      TabIndex  = 0
      Top       = 150
      Width     = 1800
End
End
```

361

5,832,171

362



viewgoto.bmp

VIEWGOTO.FRM - 1

VERSION 2.00

Begin Form ViewGoto

```

BorderStyle   = 3  'Fixed Double
Caption       = "Go to Frame"
ClientHeight  = 1110
ClientLeft    = 3090
ClientTop     = 4950
ClientWidth   = 2565
ClipControls  = 0  'False
ControlBox    = 0  'False
Height        = 1515
Left          = 3030
LinkTopic     = "Form1"
MaxButton     = 0  'False
MinButton     = 0  'False
ScaleHeight   = 1110
ScaleWidth    = 2565
Top           = 4605
Width         = 2685

```

Begin CheckBox bOkay

```

Caption       = "bOkay"
Height        = 315
Left          = 1290
TabIndex      = 4
Top           = 1620
Visible       = 0  'False
Width         = 975

```

End

Begin CommandButton btnCancel

```

Cancel        = -1 'True
Caption       = "Cancel"
Height        = 330
Left          = 1365
TabIndex      = 3
Top           = 585
Width         = 975

```

End

Begin CommandButton btnOK

```

Caption       = "OK"
Default       = -1 'True
Height        = 330
Left          = 195
TabIndex      = 2
Top           = 585
Width         = 975

```

End

Begin TextBox txtGoto

```

FontBold      = 0  'False
FontItalic    = 0  'False
FontName      = "Arial"

```

VIEWGOTO.FRM - 2

```
        FontSize      = 8.25
        FontStrikethru = 0   'False
        FontUnderline  = 0   'False
        Height         = 315
        Left           = 1155
        TabIndex       = 1
        Top            = 135
        Width          = 1125
    End
    Begin Label lblGoto
        Caption        = "&Frame:"
        Height         = 300
        Left           = 375
        TabIndex       = 0
        Top            = 180
        Width          = 750
    End
End
```

367

5,832,171

368



check0.bmp

369

5,832,171

370



check1.bmp



371

5,832,171

372



check2.bmp

373

5,832,171

374

CD ROM  
not loaded

offline.bmp

\*\*\* END OF SECTION VI \*\*\*

While the resultant product made by the process described above is output onto a diskette and one or more CD-ROMS, it is within the scope of the invention to output the entire product onto one or more CD-ROMS. Since ASCII transcripts and the SYNC and optional PRESYNC files are relatively small in comparison to the video files, a small amount of space on the CD-ROM may be reserved for the information and data normally stored on the diskette. It is also within the scope of the invention to store the video product on other forms of random access storage media of suitable capacity and retrieval speed. CD-ROMs are the currently preferred storage medium. While the embodiment of the invention described above stores the converted text and index information (SYNC and PRESYNC files) on a different diskette than the diskette holding the original transcript, the converted text and index information may also be stored on the diskette holding the original transcript, if sufficient space exists on the original transcript diskette.

The process of the present invention is also adaptable to digital video camera systems. These systems capture video in digital form on a randomly accessible digital storage medium, instead of on a linear tape. When such a system is used, it may not be necessary to make a second video recording because the original recording is already on a random access storage medium and most likely already includes sequentially numbered video frames. In this instance, the original video record may be used as the CD-ROM 10 in the present invention. Alternatively, the original video record may not be in the exact format usable by the present invention. In this case, the original video record is processed to place it in suitable form, and then copied onto a second random access video storage medium (CD-ROM 10) for use in the remaining steps of the present invention.

The present invention may be used for synchronizing a videotaped event that has not been transcribed. The transcript can be created while simultaneously creating the SYNC file. The present invention may also be used for synchronizing events where no video picture may even exist for the event, such as an untranscribed wiretap recording. Furthermore, the present invention may also be used for synchronizing a videotaped event that may have already been transcribed, such as a speech, a commercial, a television show, or a closed caption program.

It will be appreciated by those skilled in the art that changes could be made to the embodiments described above without departing from the broad inventive concept thereof. It is understood, therefore, that this invention is not limited to the particular embodiments disclosed, but it is intended to cover modifications within the spirit and scope of the present invention as defined by the appended claims.

I claim:

1. A method of creating a video product with synchronized video and text of an event, a first video record of the event having been made on a first storage medium and an original transcript of the event having been made on a second storage medium, the second storage medium being a random access medium, the original transcript containing spoken word information and format information, the format information including page and line numbers, the method comprising the steps of:

(a) generating a converted transcript which includes only the spoken word information, but which maintains the same lines of spoken word information as in the original transcript, the lines of the converted transcript being sequentially numbered and having a predetermined relationship to the page and line numbers of the original transcript;

(b) making a second video record on a third storage medium from the first video record, the second video record having sequentially numbered video frames, the third storage medium being a random access storage medium;

(c) displaying the converted transcript on a computer while playing the second video record on the same computer;

(d) signalling to the computer at each line of the converted transcript when the second video record matches the current line of text of the converted transcript;

(e) creating an index of the page and line numbers of the original transcript to the video frames of the second video record from the signals in step (d) and the video frame information, the page and line numbers being recreated from the converted transcript lines and the predetermined relationship therebetween; and

(f) storing the index and the converted transcript on a fourth storage medium, the fourth storage medium being a random access medium, the third and fourth storage media together being the video product and being usable together to simultaneously play back the second video record, the corresponding transcript, and the original page and line numbers by using the index on the fourth storage medium.

2. A method according to claim 1 wherein the signalling in step (d) is performed by an operator.

3. A method according to claim 2 wherein the operator signals at the end of each line.

4. A method according to claim 1 wherein the format information further includes party identifying information or transcript service identifying information.

5. A method according to claim 1 wherein step (c) includes displaying the converted transcript while listening to the second video record, or while viewing and listening to the second video record.

6. A method according to claim 1 wherein step (d) further includes locating an initial synchronization point of the converted transcript and the second video record, scrolling line-by-line through the converted transcript and signalling to the computer at each line of the converted transcript when the second video record matches the current line of text of the converted transcript.

7. A method according to claim 1 wherein step (c) includes displaying the page and line numbers of the original transcript, the page and line numbers being recreated from the converted transcript lines and the predetermined relationship therebetween.

8. A method according to claim 1 wherein the third storage medium is a CD-ROM.

9. A method according to claim 1 wherein the fourth storage medium is a diskette.

10. A method according to claim 1 wherein the event is a legal proceeding.

11. A method according to claim 1 wherein the first storage medium is an analog, serially recorded storage medium.

12. A method according to claim 1 wherein the lines of the converted transcript are sequentially numbered from 1 to n.

13. A method according to claim 1 wherein the third and fourth media are the same.

14. A method of creating a video product with synchronized video and text of an event, a first video record of the event having been made on a first storage medium, the first video record including time or SMPTE information, an original transcript of the event having been made on a second storage medium, the second storage medium being a

random access medium, the original transcript containing spoken word information, time or SMPTE information per line, and format information, the time or SMPTE information of the original transcript being identical to the time or SMPTE information of the first video record, the format information including page and line numbers, the method comprising the steps of:

- (a) generating a converted transcript which includes only the spoken word information, but which maintains the same lines of spoken word information as in the original transcript, the lines of the converted transcript being sequentially numbered and having a predetermined relationship to the page and line numbers of the original transcript;
  - (b) generating a first file containing the time or SMPTE code information for each line of the original transcript;
  - (c) making a second video record on a third storage medium from the first video record, the second video record having sequentially numbered video frames, the third storage medium being a random access storage medium;
  - (d) generating a second file containing the time or SMPTE code information for each numbered frame of the second video record;
  - (e) automatically creating an index of the page and line numbers of the original transcript to the video frames of the second video record from the first and second files of time or SMPTE information, the page and line numbers being recreated from the converted transcript lines and the predetermined relationship therebetween; and
  - (f) storing the index and the converted transcript on a fourth storage medium, the fourth storage medium being a random access medium, the third and fourth storage media together being the video product and being usable together to simultaneously play back the second video record, the corresponding transcript, and the original page and line numbers by using the index on the fourth storage medium.
15. A method according to claim 14 wherein the format information further includes party identifying information or transcript service identifying information.
16. A method according to claim 14 wherein the third storage medium is a CD-ROM.
17. A method according to claim 14 wherein the fourth storage medium is a diskette.
18. A method according to claim 14 wherein the event is a legal proceeding.
19. A method according to claim 14 wherein the first storage medium is an analog, serially recorded storage medium.
20. A method according to claim 14 wherein the lines of the converted transcript are sequentially numbered from 1 to n.
21. A method according to claim 14 wherein the third and fourth media are the same.
22. A method according to claim 14 wherein the first and second files are part of a single file structure.
23. A method of creating a video product with synchronized video and text of an event, a first video record of the event having been made on a first storage medium and an original transcript of the event having been made on a second storage medium, the second storage medium being a random access medium, the original transcript containing spoken word information, time or SMPTE information per line, and format information, the format information including page and line numbers, the method comprising the steps of:

- (a) generating a converted transcript which includes only the spoken word information, but which maintains the same lines of spoken word information as in the original transcript, the lines of the converted transcript being sequentially numbered and having a predetermined relationship to the page and line numbers of the original transcript;
  - (b) generating a file containing the time or SMPTE code information for each line of the original transcript;
  - (c) making a second video record on a third storage medium from the first video record, the second video record having sequentially numbered video frames, the third storage medium being a random access storage medium;
  - (d) locating an initial synchronization point of the converted transcript and the second video record;
  - (e) automatically creating an index of the page and line numbers of the original transcript to the video frames of the second video record from the file of time or SMPTE information, the second video record and the initial synchronization point, the page and line numbers being recreated from the converted transcript lines and the predetermined relationship therebetween; and
  - (f) storing the index and the converted transcript on a fourth storage medium, the fourth storage medium being a random access medium, the third and fourth storage media together being the video product and being usable together to simultaneously play back the second video record, the corresponding transcript, and the original page and line numbers by using the index on the fourth storage medium.
24. A method according to claim 23 wherein the format information further includes party identifying information or transcript service identifying information.
25. A method according to claim 23 wherein the third storage medium is a CD-ROM.
26. A method according to claim 23 wherein the fourth storage medium is a diskette.
27. A method according to claim 23 wherein the event is a legal proceeding.
28. A method according to claim 23 wherein the first storage medium is an analog, serially recorded storage medium.
29. A method according to claim 23 wherein the lines of the converted transcript are sequentially numbered from 1 to n.
30. A method according to claim 23 wherein the third and fourth media are the same.
31. A method according to claim 23 wherein the index created in step (g) is an initial index, the method further comprising the step of:
- (g) viewing the video product to detect any discontinuity between the video and corresponding transcript and if a discontinuity is detected,
  - (h) locating a subsequent synchronization point of the converted transcript and the second audio-visual record, and
  - (i) repeating steps (g) and (h) to automatically create a modified index, the modified index being stored in place of the initial index.
32. A method of creating a video product with synchronized video and text from an event,
- (a) receiving in a computer
    - (i) a video output of a video capturing device, and
    - (ii) an output of a computer-aided transcription device, the output including lines of spoken word

379

information, page and line numbers corresponding to the lines of spoken word information and end of line signals;

- (b) automatically creating in the computer an index of the page and line numbers to sequentially numbered video frames, the sequentially numbered video frames representing the video output which occurs at the same instance of time as the end of each line from the device;
- (c) storing the video output on a first random access storage medium; and
- (d) storing the index and the output of the device on a second random access storage medium, the first and second storage media together being the video product and being usable together to simultaneously play back a video of the event, the corresponding transcript, and the original page and line numbers by using the index on the second storage medium.

33. A method according to claim 32 wherein the event is a live event and steps (a)–(d) occur while the live event proceeds.

34. A method according to claim 32 wherein the event is a past event captured on a video storage medium, and steps (a)–(d) occur while playing back the past event from the video storage medium.

35. A method according to claim 32 wherein the first random access storage medium is a CD-ROM.

36. A method according to claim 32 wherein the second random access storage medium is a diskette.

37. A method according to claim 32 wherein the event is a legal proceeding.

38. An apparatus for creating a video product with synchronized video and text of an event, a first video record of the event having been made on a first storage medium and an original transcript of the event having been made on a random access medium, the second storage medium being a random access medium, the original transcript containing spoken word information and format information, the format information including page and line numbers, the apparatus comprising:

- (a) means for generating a converted transcript which includes only the spoken word information, but which maintains the same lines of spoken word information as in the original transcript, the lines of the converted transcript being sequentially numbered and having a predetermined relationship to the page and line numbers of the original transcript;
- (b) means for making a second video record on a third storage medium from the first video record, the second video record having sequentially numbered video frames, the third storage medium being a random access storage medium;
- (c) a computer for displaying the converted transcript and simultaneously playing the second video record;
- (d) a signalling device for outputting signals to the computer at each line of the converted transcript when the second video record matches the current line of text of the converted transcript;
- (e) means for creating an index of the page and line numbers of the original transcript to the video frames of the second video record from the output signals and the video frame information, the page and line numbers being recreated from the converted transcript lines and the predetermined relationship therebetween; and
- (f) means for storing the index and the converted transcript on a fourth storage medium, the fourth storage medium being a random access medium, the third and

380

fourth storage media together being the video product and being usable together to simultaneously play back the second video record, the corresponding transcript, and the original page and line numbers by using the index on the fourth storage medium.

39. An apparatus according to claim 38 wherein the third storage medium is a CD-ROM.

40. An apparatus according to claim 38 wherein the fourth storage medium is a diskette.

41. An apparatus according to claim 38 wherein the event is a legal proceeding.

42. An apparatus according to claim 38 wherein the first storage medium is an analog, serially recorded storage medium.

43. An apparatus according to claim 38 wherein the lines of the converted transcript are sequentially numbered from 1 to n.

44. An apparatus according to claim 38 wherein the third and fourth media are the same.

45. An apparatus for creating a video product with synchronized text and video of an event, a first video record of the event having been made on a first storage medium, the first video record including time or SMPTE information, an original transcript of the event having been made on a second storage medium, the second storage medium being a random access medium, the original transcript containing spoken word information, time or SMPTE information per line, and format information, the time or SMPTE information of the original transcript being identical to the time or SMPTE information of the first video record, the format information including page and line numbers, the apparatus comprising:

- (a) means for generating a converted transcript which includes only the spoken word information, but which maintains the same lines of spoken word information as in the original transcript, the lines of the converted transcript being sequentially numbered and having a predetermined relationship to the page and line numbers of the original transcript;
- (b) means for generating a first file containing the time or SMPTE code information for each line of the original transcript;
- (c) means for making a second video record on a third storage medium from the first video record, the second video record having sequentially numbered video frames, the third storage medium being a random access storage medium;
- (d) means for generating a second file containing the time or SMPTE code information for each numbered frame of the second video record;
- (e) means for automatically creating an index of the page and line numbers of the original transcript to the video frames of the second video record from the first and second files of time or SMPTE information, the page and line numbers being recreated from the converted transcript lines and the predetermined relationship therebetween; and
- (f) means for storing the index and the converted transcript on a fourth storage medium, the fourth storage medium being a random access medium, the third and fourth storage media together being the video product and being usable together to simultaneously play back the second video record, the corresponding transcript, and the original page and line numbers by using the index on the fourth storage medium.

46. An apparatus according to claim 45 wherein the third storage medium is a CD-ROM.

47. An apparatus according to claim 45 wherein the fourth storage medium is a diskette.

48. An apparatus according to claim 45 wherein the event is a legal proceeding.

49. An apparatus according to claim 45 wherein the first storage medium is an analog, serially recorded storage medium.

50. An apparatus according to claim 45 wherein the lines of the converted transcript are sequentially numbered from 1 to n.

51. An apparatus according to claim 45 wherein the third and fourth media are the same.

52. An apparatus according to claim 45 wherein the first and second files are part of a single file structure.

53. An apparatus for creating a video product with synchronized video and text of an event, a first video record of the event having been made on a first storage medium and an original transcript of the event having been made on a second storage medium, the second storage medium being a random access medium, the original transcript containing spoken word information, time or SMPTE information per line, and format information, the format information including page and line numbers, the apparatus comprising:

(a) means for generating a converted transcript which includes only the spoken word information, but which maintains the same lines of spoken word information as in the original transcript, the lines of the converted transcript being sequentially numbered and having a predetermined relationship to the page and line numbers of the original transcript;

(b) means for generating a file containing the time or SMPTE code information for each line of the original transcript;

(c) means for making a second video record on a third storage medium from the first video record, the second video record having sequentially numbered video frames, the third storage medium being a random access storage medium;

(d) means for locating an initial synchronization point of the converted transcript and the second video record;

(e) means for automatically creating an index of the page and line numbers of the original transcript to the video frames of the second video record from the file of time or SMPTE information, the second video record and the initial synchronization point, the page and line numbers being recreated from the converted transcript lines and the predetermined relationship therebetween; and

(f) means for storing the index and the converted transcript on a fourth storage medium, the fourth storage medium being a random access medium, the third and fourth storage media together being the video product and being usable together to simultaneously play back the second video record, the corresponding transcript, and the original page and line numbers by using the index on the fourth storage medium.

54. An apparatus according to claim 53 wherein the third storage medium is a CD-ROM.

55. An apparatus according to claim 53 wherein the fourth storage medium is a diskette.

56. An apparatus according to claim 53 wherein the event is a legal proceeding.

57. An apparatus according to claim 53 wherein the first storage medium is an analog, serially recorded storage medium.

58. An apparatus according to claim 53 wherein the lines of the converted transcript are sequentially numbered from 1 to n.

59. An apparatus according to claim 53 wherein the third and fourth media are the same.

60. An apparatus according to claim 53 wherein the index is an initial index, the apparatus further comprising:

(g) means for viewing the video product to detect any discontinuity between the video and corresponding transcript and if a discontinuity is detected, locating a subsequent synchronization point of the converted transcript and the second audio-visual record, and

(h) means for automatically creating a modified index if a discontinuity is detected, the modified index being stored in place of the initial index.

61. An apparatus for creating a video product with synchronized video and text from an event, the apparatus comprising:

(a) a computer for receiving a video output of a video capturing device, and an output of a computer-aided transcription device, the output including lines of spoken word information and page and line numbers corresponding to the lines of spoken word information;

(b) means for creating an index of the page and line numbers to sequentially numbered video frames, the sequentially numbered video frames representing the video output which occurs at the same instance of time as the end of each line from the device;

(c) means for storing the video output on a first random access storage medium; and

(d) means for storing the index and the output of the device on a second random access storage medium, the first and second storage media together being the video product and being usable together to simultaneously play back a video of the event, the corresponding transcript, and the original page and line numbers by using the index on the second storage medium.

62. An apparatus according to claim 61 wherein the event is a live event and the video product is created while the live event proceeds, the video capturing device being a video camera at the live event.

63. An apparatus according to claim 61 wherein the event is a past event captured on a video storage medium, and the video product is created while playing back the past event from the video storage medium, the video capturing device being a video recorder which plays back the video storage medium.

64. An apparatus according to claim 61 wherein the first random access storage medium is a CD-ROM.

65. An apparatus according to claim 61 wherein the second random access storage medium is a diskette.

66. An apparatus according to claim 61 wherein the event is a legal proceeding.

\* \* \* \* \*



US005926789A

**United States Patent** [19]

Barbara et al.

[11] **Patent Number:** 5,926,789[45] **Date of Patent:** Jul. 20, 1999[54] **AUDIO-BASED WIDE AREA INFORMATION SYSTEM**[75] Inventors: Daniel Barbara, Mercer County;  
Shamim A. Naqvi, Morris County, both  
of N.J.[73] Assignee: Bell Communications Research, Inc.,  
Morristown, N.J.

[21] Appl. No.: 08/770,025

[22] Filed: Dec. 19, 1996

[51] Int. Cl.<sup>6</sup> ..... G01L 9/06

[52] U.S. Cl. .... 704/275; 704/272

[58] Field of Search ..... 704/251, 270,  
704/275, 272; 379/69, 67, 88.04, 88.02,  
88.03, 88.17, 88.18, 88.23[56] **References Cited**

## U.S. PATENT DOCUMENTS

4,870,686	9/1989	Gerson et al.	704/251
5,351,276	9/1994	Doll, Jr. et al.	379/67
5,524,141	6/1996	Braun et al.	379/93
5,539,808	7/1996	Innis et al.	379/67

5,572,643	11/1996	Judson	395/793
5,586,235	12/1996	Kauffman	395/761
5,671,354	9/1997	Ito et al.	395/187.01
5,681,108	10/1997	Müller	364/411
5,761,280	6/1998	Noonen et al.	379/93.27

Primary Examiner—Richmond Dorvil

Attorney, Agent, or Firm—Joseph Giordano; David A. Hey

[57] **ABSTRACT**

A wide area information system includes a client and at least one server on which audio data is stored. Audio data is selectively transferred to the client from the server by at least occasionally establishing a transfer connection between the server and the client. The transfer of audio data is controlled by user-selected commands and inputs that are entered via an input interface provided on the client. These commands and inputs are also transferred to the server via the at least occasionally established transfer connection between the client and the server. The audio data on the server is organized in page units that are cross-linked by way of hyperaudio links. The page units are characteristically searchable with the use of cyclically repeating directory pages of audible directory information. Finally, a data protocol is defined for enabling such an audio-based system.

44 Claims, 3 Drawing Sheets

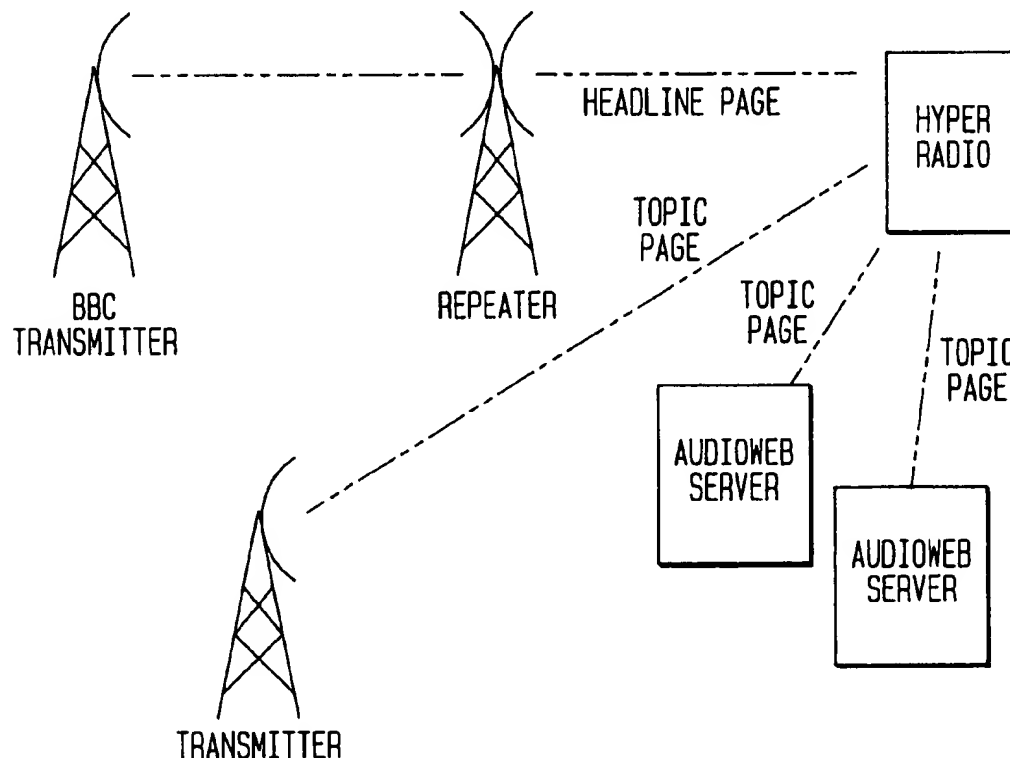


FIG. 1

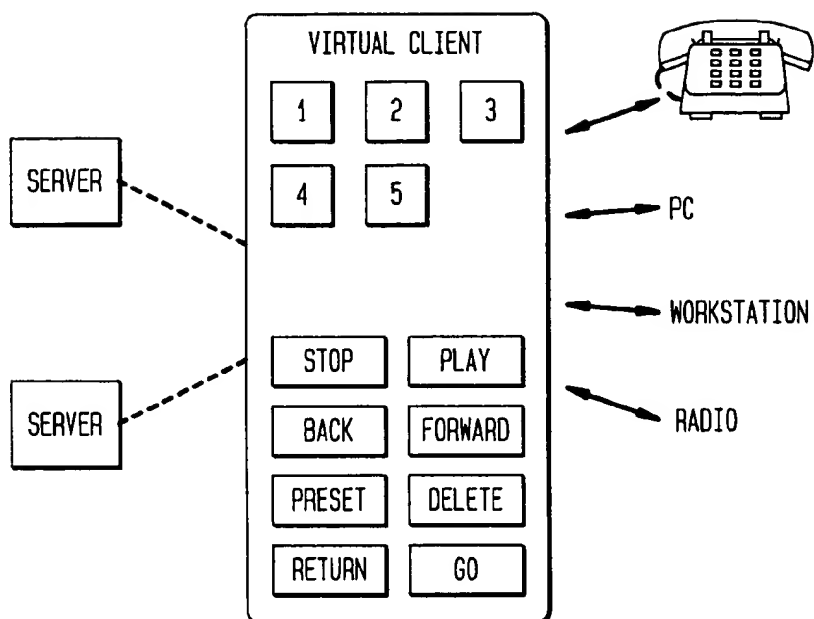


FIG. 2

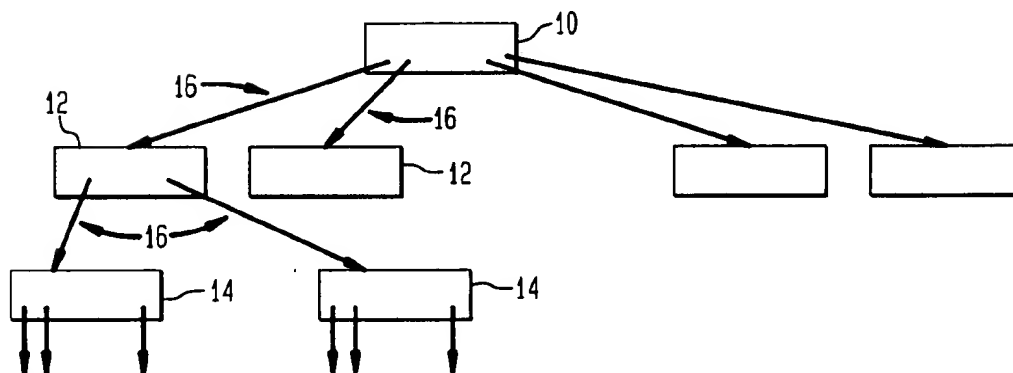




FIG. 3

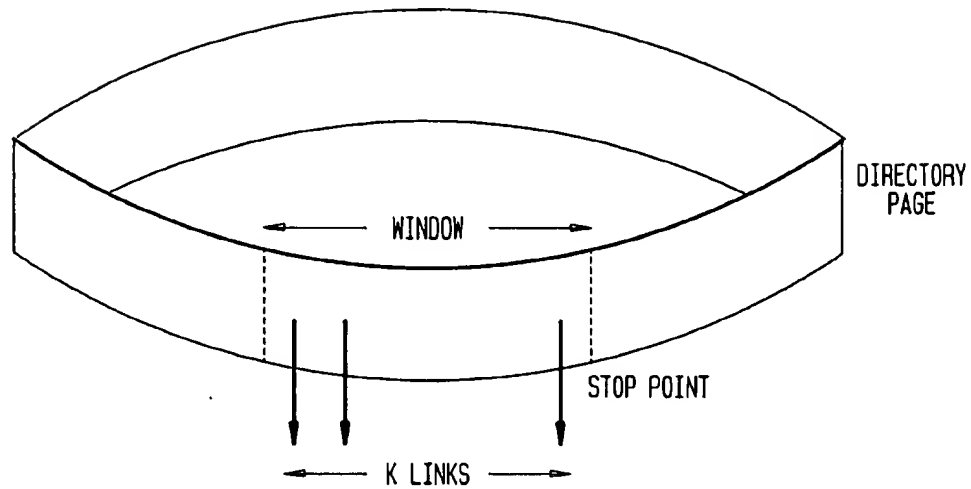


FIG. 4

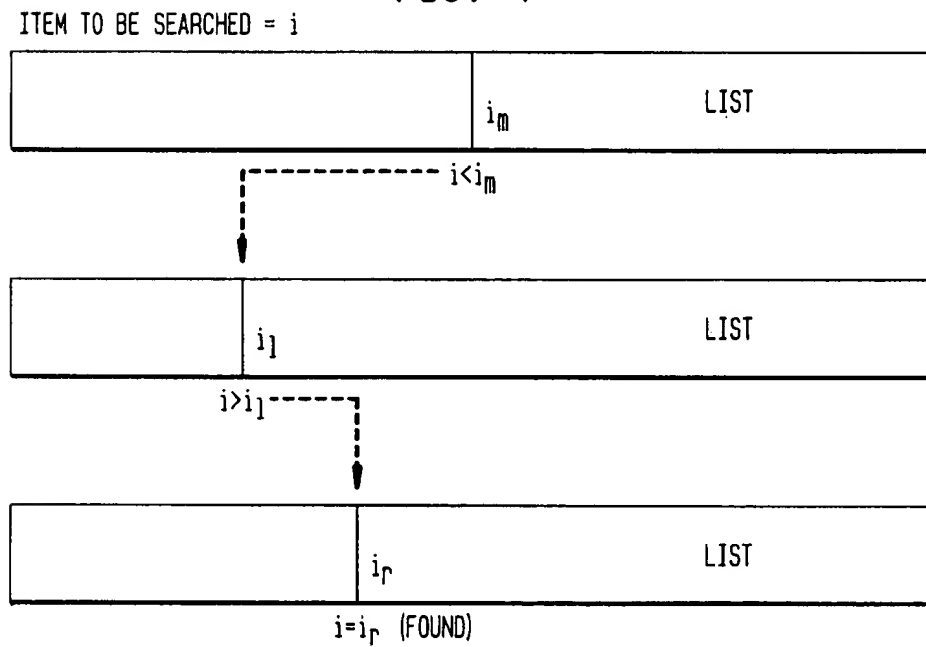


FIG. 5

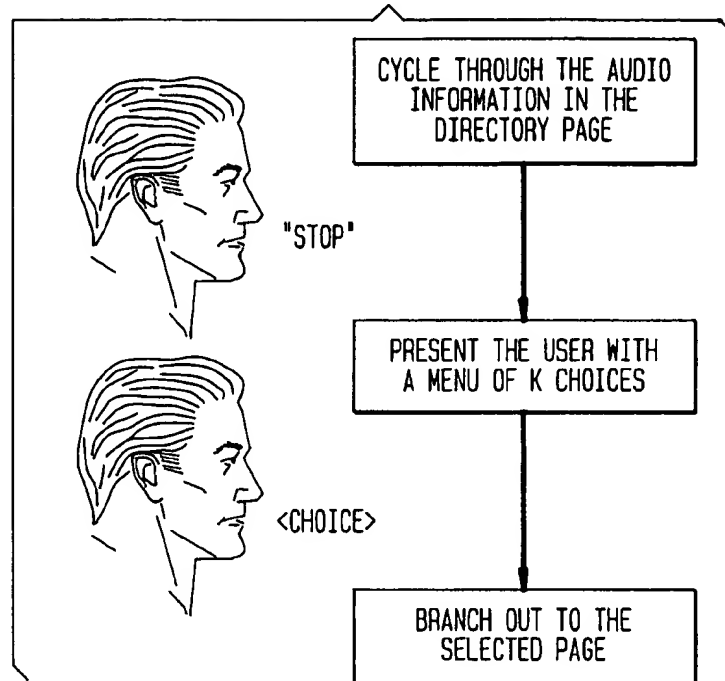
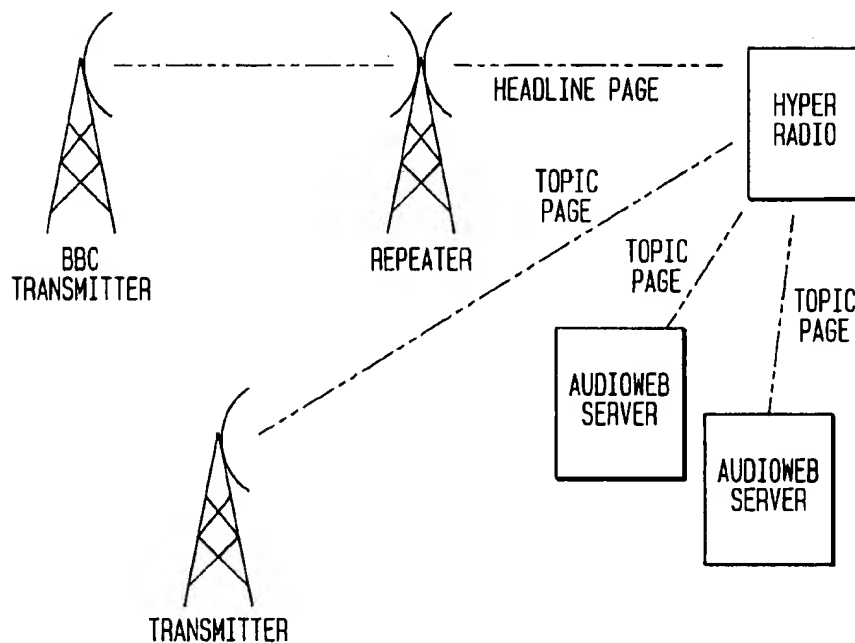


FIG. 6



## AUDIO-BASED WIDE AREA INFORMATION SYSTEM

### BACKGROUND OF THE INVENTION

#### 1. Field of Invention

The present invention relates to a wide area information system for organizing and accessing information, as well as methods for implementation thereof.

#### 2. Description of Related Art

The popularity of the World Wide Web (WWW) segment of the Internet has risen dramatically in the recent past as the general public has become more aware of its existence. However, despite its popularity and diversity, audio information plays a noticeably small role on the WWW.

Current uses of audio on the WWW include the ability to download audio segments from certain WWW sites. Typically, a user must wait, sometimes for extended periods of time, until the entire audio file is transmitted before the audio file can be heard.

A system developed at Texas Instruments, Inc. allows a user to access the WWW through a speech interface, thereby obviating conventional point and click access to WWW hyperlinks. However, this system still requires a visual display terminal to show the data being browsed and to guide the input of commands. According to the TI system, a user can "jump" to different pages by speaking the name of a hyperlink.

It can be seen in the foregoing conventional systems that audio is still substantially a secondary object. First, the bulk of the information on a WWW page is simply not audio information. Second, the user still requires a visual interface to enable navigation, even with, for example, the TI speech interface.

This latter issue is a problem when a user does not have access to a computer or the like, or is engaged in activities that require the user's visual attention, such as driving an automobile.

However it is felt that audio remains an important medium for information, and can satisfy heretofore unmet demands in wide area information systems.

However, in applications where attempts have been made to use audio as the primary operational medium, such as phone menu systems (such as voice mail), such systems frequently overwhelm a user by requiring the user to memorize menu lists, yet presenting so much information in such lists that recollection is made difficult or impossible.

### SUMMARY OF THE INVENTION

It is therefore an object of the invention to provide a client-server based wide area information system using audio as a primary medium for the information.

The client, sometimes called the virtual client, according to the present invention can play audio files, respond to commands input via an interface, and communicate with servers to retrieve "pages" of audio information. The client may be embodied by any number of devices, such as a telephone, a personal computer, a workstation, or a radio.

Servers provide audio information in units generally called audio pages, similar to the WWW. (Later in this discussion, a distinction is made between Audio Web pages and directory pages.) The audio pages are indexed via a directory service. Typically, according to the present invention, a searchable directory page is cyclically presented to the user. Generally each directory level contains audio

links to a sub-directory page. The last level of the directory service points to individual audio pages (i.e. Audio Web pages) that are registered in the directory service.

These and other objects and novel features of the present invention will become more apparent from the following detailed description, taken in conjunction with the accompanying drawings.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 illustrates an audio client according to the present invention;

FIG. 2 schematically illustrates the hierarchy of the directory service levels according to the present invention;

FIG. 3 illustrates an option menu "window" from a cycling directory page;

FIG. 4 illustrates a binary searching method usable with the present invention;

FIG. 5 conceptually illustrates the process of navigating a directory page; and

FIG. 6 illustrates a Digital HyperRadio system according to the present invention.

### DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention is initially described herein in terms of using audio information as the basis of the system. However, this is done by way of example only, in order to fully illustrate the concepts related to the present invention. It is explicitly contemplated, as discussed later, that these concepts can be applied in other forms or combinations, such as multimedia environments.

FIG. 1 illustrates a virtual audio client, and its role in the client-server system according to the present invention.

The virtual audio client (interchangeably referred to herein as "client") is the means by which a user navigates the Audio Web. As illustrated in FIG. 1, the client can recognize several inputs and commands. For example, the client may recognize the input of the first five cardinal numbers (one through five), and the commands STOP, PLAY, FORWARD, BACK, PRESET, DELETE, RETURN, and GO.

The client is shown in FIG. 1 with an appearance similar to a video cassette recorder remote control, with buttons corresponding to the aforementioned inputs. However, this is only illustrative, and the actual manner in which the client is implemented depends on the tangible device in which the client is embodied. That is, the manner in which a user "presses" one of the conceptual input buttons shown in FIG. 1 depends on the device being used to access the client. For example, a user might use a telephone, a personal computer, a workstation, a radio, etc.

If a telephone is used, for example, the client may be implemented by establishing a connection between the telephone and a computing device. The connection may be a local (i.e., hardwire) one, or it may be established by dialing to a computing facility that communicates with the phone via a standard phone connection.

A user issues commands using the phone by pressing respective keys on the telephone, with each key on the telephone being mapped to correspond to a certain command. The standard tones generated by the telephone in response to pressing respective number keys are transmitted to the computer, which is suitably able (via conventional sound recognition software) to recognize the tones so as to trigger corresponding programs to implement the desired command(s).

Alternatively, a user verbalizes commands into the phone. The computer, equipped with suitable voice recognition software (for example, speaker independent with a limited vocabulary), would map the recognized spoken command to the corresponding command program.

If a PC or workstation were used to implement the client, the implementing input device and the computing device would come in a single "package". In this instance, a user might provide input using a graphical interface combined with a mouse-type control device.

It is emphasized that the foregoing examples are by way of illustration, and are not meant to limit the means by which the client according to the present invention may be implemented. For example, a more extensive discussion of using radio transceivers appears later in this disclosure.

To give an overview of the Audio Web as contemplated, the following hypothetical scenario is offered in a dialogue format, illustrating the input provided by a user and the action of the client and server(s). In the scenario, a user is interested in finding information about the Beatles Anthology (from Capitol Records).

Client: "Welcome to the Audio Web directory server. We have lots of interesting subjects for you: Martinis . . . Mice . . . Music!"

User: STOP (by "pressing" the STOP key on the virtual client or verbalizing "Stop").

Client: "Please select one of the following choices: ONE: Music, TWO: Marine Life, THREE: Libraries, FOUR: Land Irrigation, FIVE: Kites"

User: ONE (by "pressing" or verbalizing the command).

Client: <contacts the appropriate server for the requested audio page>

Server: <sends the audio page over to the client>

Client: "You selected the music directory. All kinds of music can be reached from here!

Baroque<a sample of a baroque piece is played> . . .  
Rock<a sample of rock music track is played> . . ."

User: STOP

Client: "Your choices are: ONE: Samba, TWO: Rock, THREE: Jazz, FOUR: Mambo, FIVE: Polkas"

User: TWO

Client: <contacts the appropriate server for the requested page>

Server: <sends the page over to the client>

Client: "This is the Rock page: hear more about the greatest groups of all time: Beatles, . . ."

User: STOP

Client: "You want to go to ONE: Beatles, TWO . . ."

User: ONE

Client: "Welcome to the Audio Web Magical Mystery Tour!!

These pages contain a collection of Beatles sound files.

Check out the new Anthology page for the latest Beatles release!

<a sample of the new Beatles track is played> . . ."

User: STOP

Client: "Want to visit the ONE: Anthology page, TWO: John Lennon page, THREE: Paul McCartney page, FOUR: George Harrison page, FIVE: Ringo Starr page"

User: ONE

Client: <contacts the appropriate server for the requested page>

Server: <sends the page over to the client>

Client: "<The initial part of the new Beatles track 'Free as a Bird' starts playing> . . ."

Thus, the system according to the present invention requires the following functionality.

A user is provided with a way to search the Audio Web to locate audio pages of interest using a directory service. As seen in the foregoing hypothetical example, such a navigation means through the Audio Web is vital. In the example, the first three pages retrieved were directory pages that were "stacked" according to the hierarchical structure shown in FIG. 2.

Once in a page, "hyperaudio" links are provided to other pages, (frequently, but not always, associated with related subjects). As seen above, for example, the user jumped from the Something New page to the Anthology page using the appropriate hyperaudio link. Hyperaudio links are generally analogous to hypertext links in the WWW (and are interchangeably referred to herein as "audio links").

The user can input commands and other information (via the client) to control navigation through the Audio Web. The user could, for example, jump back to the Something New page after finishing with the Anthology page, then back to the Beatles page again, using appropriate navigational commands, as discussed below.

The user can also place a bookmark to mark a particular audio page, thereby enabling a direct jump to that page instead of navigating through one or more directories. Furthermore, a bookmark list is provided to catalog a user's selected bookmarks.

Audio pages can be authored and included in directory page hierarchies. Also, authors can incorporate hyperaudio links in their audio pages.

Finally, a standard protocol for transmitting audio tracks is used.

To let users find pages of interest, the following schema of directories is used. When downloaded, each directory is a stream of menu choices that is cyclically presented to the user in an audible manner. The directory format is, of course, use-specific, but is preferably informative, entertaining, and, most importantly, searchable. The user's first contact with the Audio Web is with a home directory page 10, similar to a "home page" page on the WWW (see FIG. 2). This home directory page 10 contains hyperaudio links 16 to one or more sub-directory pages 12. This structure continues for a number of levels, forming a hierarchical tree structure such as the one generally depicted in FIG. 2. The directory pages 14 (leaf nodes) in a last, or lowermost, level are individual audio pages that have been registered in the directory page.

The stacked "tree" organization shown in FIG. 2 is desirable because the fanout of links is kept to a reasonable number while providing manageable indexing for a large number of audio pages. The tree organization used here is comparable to the B-tree organization commonly used in database management systems. Each audio page has a maximum number of audio links and fixed capacity for audio information. This is advantageous because the user is not overwhelmed by extraneous information clutter while listening to a directory page, and, more importantly, the number of choices in any given option menu does not become excessive, such that the user is burdened by having to remember large numbers of choices.

Another way to organize the pages according to the present invention (not illustrated) is to provide a non-stacked plurality of pages in which a given page is linked to at least one other page by a hyperaudio link, without a stacked hierarchy.

Each hyperaudio link is associated with a portion of the audio track of an audio page, in the same manner that a hypertext link in the WWW is associated with a highlighted portion of the text on a page.

As mentioned above, when a user first connects to an Audio Web server, the first audio page the user encounters

is a home directory page, which is in the form of a repeating audio track, generally listing a plurality of hyperaudio links. In order to use this directory, the user issues a STOP command from the client, (for example, when an audio link of interest is heard). The directory then provides an option menu consisting of the last  $k$  (for example, five) hyperaudio links located before the STOP command was issued. FIG. 3 illustrates the concept of the repeating directory page, and, more specifically, the set of  $k$  hyperaudio links defined in a window according to a STOP command issued by the user.

At this point, the user hears a new audio track naming the  $k$  hyperaudio links. Such an audio track might be as follows:

"These are your choices at this point:

One: <name of the 1st hyperaudio link>;

Two: <name of the 2nd hyperaudio link>;

Three: <name of the 3rd hyperaudio link> . . . "

up to the  $k$ th hyperaudio link. The user then makes a selection by inputting the corresponding number via the client. The system therefore defines a dynamic option menu based on a time-based window of the past  $k$  links. It will be appreciated that this concept of a dynamic window guarantees that the user will be presented each time with a set of  $k$  options, regardless of the fanout (i.e. the total number of hyperaudio links defined on the given audio page). This is advantageous because the user need only deal with a relatively small number of options at any one time, keeping the selection thereof manageable.

However, even with the dynamic window concept, a user still could be faced with listening to a large list of hyperaudio links before finding a topic of interest.

Therefore, according to the present invention, a method is provided for facilitating searching through directory pages. In particular, a binary search methodology is useful here. Binary searching is known as a recursive way to quickly search through ordered items.

FIG. 4 is a general illustration of the binary search methodology. In the first "pass", the search starts from the item  $i_m$  at the middle of the list. If  $i_m$  is "bigger than" (for example, numerically greater than, or alphabetically after) the item  $i_r$  being sought, the search is moved to the "left" of the middle of the list, toward the "lower" end of the list. On the other hand, if  $i_m$  is "smaller than" (for example, numerically smaller than, or alphabetically preceding) the item being sought, the search is moved to the "right" of the middle of the list, toward to the "higher" end.

Generally, each move is to the middle of one of the subportions defined by the middle point at the start of the pass. Therefore, in the first pass illustrated in FIG. 4, the move is, in general, made from the middle of the entire list  $i_m$ , to the middle of one of the two subportions (in this case, halves) defined by  $i_m$ , where each of these subportions extends between  $i_m$  and one of the ends of the entire list.

Thus, as illustrated in FIG. 4, in the first pass, a decision is made that  $i_r < i_m$ . Therefore, the first move is made to the left from  $i_m$  to  $i_1$ , where  $i_1$  is the item midway between the end of the list and item  $i_m$ .

In the second pass, a decision is made that  $i_r > i_1$ . Therefore, the second move is made to the right from  $i_1$  to  $i_r$ , since item  $i_r$  is midway between  $i_1$  and  $i_m$ . Since  $i_r$  happens to be the item being sought, the search is complete.

The recursive "narrowing down" process continues as necessary to arrive at the item being sought. It is known that the number of passes necessary is proportional to the logarithm of the size (number of items) of the entire list.

As applied to the present invention, the binary search is used in a browsing/searching system in the following manner.

When a user wants to search an audio track (which can be done at any time while the audio track is being played), the user inputs a BACK or FORWARD command, as appropriate. In response, the browser locates the middle time point  $t_m$  between the current time position  $t_1$  in the audio track and the end or start of the audio track,  $t_e$ . The browser then plays the audio track from  $t_m$  forward. If the user decides that the item being sought is before (i.e., to the "left" of)  $t_m$ , then a BACK command is issued, and the browser plays the audio starting from the midpoint between  $t_1$  and  $t_m$ . On the other hand, if the user decides that the item being sought is after (i.e., to the "right" of)  $t_m$ , then a FORWARD command is input, making the audio playback advance to the midpoint between  $t_m$  and  $t_e$ .

As was explained relative to FIG. 4, when this approach is repeated, the search arrives at the target item relatively quickly. When the user finally arrives at the target item, the user issues a STOP command. Thereafter, the above-described dynamic menu window is built, based on the target item.

Once the user selects a hyperaudio link from the dynamic menu window, the corresponding audio page is sent to the client from the server, and the above-described process begins over. More specifically, if the newly selected audio page is a directory, the user will hear again repeated audio information, as described above. If the newly selected audio page is an Audio Web page, then the user hears the audio information contained therein, and can use it as desired. FIG. 5 illustrates the concept of the navigating the Audio Web according to the present invention.

Audio Web pages are processed in a manner similar to directory pages. The only substantive difference is that Audio Web pages are not repeated as directory pages are. The user receives the information linearly, as presented in the description of the page. When hearing this audio information, the user can use the STOP command, which prompts a menu of choices formed by the last  $k$  hyperaudio links in the page, as illustrated in FIG. 3. Thereafter, the user can select a number corresponding to the hyperaudio link of choice, and branch or jump to the new page corresponding to that hyperaudio link (see, again, FIG. 5).

It will be appreciated that, over time, the user will probably come across many pages to which he or she will wish to return later, but without having to go through the relatively time-consuming process of searching through the directories. A bookmark, as its name implies, simply "marks" a particular page of interest so that it can be jumped to directly. Bookmarks may be accumulated in a bookmark list that can be organized as a directory page, in the manner of the directory pages discussed above. In this context, a bookmark list has the same structure as a leaf node in the directory structure.

In order to build the bookmark list, the user can use a PRESET command to assign a bookmark to a page of interest and add it to the list by adding the name of the page. The name of the page may be taken from the name of the hyperaudio link pointing to the page or, alternatively, from the name provided by (e.g., spoken by) the user, in combination with the page address. (Page addressing is discussed in more detail below.)

To retrieve a bookmarked page, the user uses a GO command that moves directly to the page in question and retrieves it for play. When the desired page is complete, the user stops the audio and proceeds to branch out to other pages using hyperaudio links on the bookmarked page.

It will be appreciated that, over time, the bookmark list may itself become relatively large, and searching it can

become cumbersome. Therefore, binary searching, as described above, is again used here to manage the search of bookmarks. It is assumed that the bookmark list is ordered lexicographically, in order to apply binary searching.

An issue understandably arises as to how the audio tracks are played or the speakable commands recognized.

In the WWW, the Hypertext Transfer Protocol (HTTP) is successful because it is stateless. That is, whenever a WWW page is accessed, the server on which that page is located simply transfers the contents of that page to the client, and does not "remember" anything about the request thereafter. The client, on which the WWW browser runs, handles page layout and user interface issues. Therefore, in effect, when a hypertext link is selected ("clicked on") by the user, a separate network connection is established to bring the newly selected page to the client. This property makes WWW servers "scaleable".

This feature is also important in the Audio Web. It is impractical to have a server connected to the client continuously while the user is only manipulating a given page. Continuously remembering the state of connections and processing commands from multiple clients would be a tremendous burden on servers. Moreover, the system would be unscaleable as usage grows. Therefore, a Hyperaudio Transfer Protocol (HATP) is provided for the Audio Web and acts in a manner similar to the HTTP for the WWW.

It is a particular feature of the present invention that the HATP is a connectionless, or stateless, protocol that delivers audio pages to the client.

In the case of the Audio Web, the equivalent to the Hypertext Markup Language (HTML) will be a Hyperaudio Markup Language (HAML) with the following structure:

```
pagetype<audio track>
audiolinks<i:  $t_i^b$ ,  $t_i^e$ , hatp address>
```

The pagetype indicates whether the page is a directory page or an Audio Web page. (A distinction is required here because directory pages are played cyclically whereas Audio Web pages are not.) The description of the hyperaudio links in the page is given after the entire audio track. This allows the entire audio track to be sent as a unit, preferably in a convenient data-compressed format (which may be conventionally known). Hyperaudio links have three components: link number (subscript  $i$  above), a pair of elapsed time values (relative to the beginning of the entire audio track) that represent the beginning  $t_i^b$  and end  $t_i^e$  of the portion of the audio track that serves as the hyperaudio link name, and finally, the HATP address of the page to which the hyperaudio link points.

HATP is preferably very similar to HTTP and should be a stateless protocol consisting of four stages:

1. Connection: establishment of a data connection by the client to a respective server, using a Universal Resource Locator (URL).
2. Request: sending a request message to the server from the client.
3. Response: sending a response message to the client from the server.
4. Close: closing the connection after the response message is complete.

Of course, some substantive differences will exist between HATP and HTTP, in terms of concepts known in HTTP.

1. The ACCEPT header line specifies HAML as the only format accepted by the client.
2. The ACCEPT-ENCODING header line specifies the encoding format of the HAML document (e.g.,

x-compress, x-zip, etc.) and the compressing format for the audio track (e.g., MPEG).

3. A method called AUDIOSEARCH is implemented instead of TEXTSEARCH, as in HTTP. This permits an object to be queried by an audio stream. The search form of the GET method is used to query an object.

Hereinafter, the methods by which the virtual client implements the above-described functionality, according to the present invention, are discussed.

Generally, the client runs the HATP protocol to request and receive HAML page descriptions. It also recognizes and implements the above-described set of commands (e.g., STOP, FORWARD, BACK, PLAY, PRESET, etc.). Finally, the client plays the audio tracks from Audio Web pages.

1. The STOP command

While a page is playing, the user may issue the STOP command. At that point the browser stops playing the audio track, and builds up the dynamic menu window including the last  $k$  links in the audio track prior to the point at which the STOP command was issued.

In order to do this, the browser tracks the elapsed time from the beginning of the audio track and also records the time at which the STOP command was issued. This time is represented as  $t_s$ . Thereafter, the Audio Web browser in the client follows the following algorithm.

Find the first link  $j$  in the link list, such that  $t_j^b > t_s$ ;

From link  $j$ , and while searching the link list backwards, do:

```
menuØ (to make the menu window initially empty);
m=1;
```

```
GL (Get Link): next link  $i$ , searching backwards if item  $i$ 
is in menu yet
goto ST (if the page has fewer than, for example, 5
links);
```

```
else,
insert item<m, link name, link address,  $t_i^b$ ,  $t_i^e$ >into
menu.
```

```
m=m+1
```

```
if m<5 (for example) goto GL
```

```
ST: play the menu items in the menu list and wait for choice
(a number from 1 to 5)
```

```
Retrieve the page pointed to by the link address in entry
m=choice.
```

2. As mentioned above, the FORWARD and BACK commands are useful in connection with binary searching of the directory pages. The browser uses the following algorithms to implement these commands.

In terms of elapsed time,  $t_1$  and  $t_r$  are the beginning and ending endpoints, respectively, of an audio track in question, with  $t_s$  being the starting point of the audio track. At the start of playback,  $t_1 = t_s = 0$ . As mentioned above,  $t_r$  is set equal to the end time of the audio track.

- a. When the FORWARD command is issued, the following procedure is followed:

Stop playing the audio track

```
Set  $t_1 = t_s$ 
```

```
Set  $t_s = \frac{1}{2}(t_1 + t_r)$ 
```

Start playing audio from time  $t_s$ .

- b. If the BACK command is issued, then the following procedure is followed:

Stop playing the audio

```
Set  $t_s = t_m$ 
```

```
 $t_s = \frac{1}{2}(t_1 + t_r)$ 
```

Start playing audio from new time  $t_s$ .

3. The RETURN command is used to order the browser to retrieve the page that immediately preceded the current page. Preferably, the browser maintains a memory cache to store the page immediately preceding the current page. More preferably, the browser should remember the state in which the immediately preceding page was left, (by, for example, caching the hyperaudio link number to which the user jumped), so that the audio track in the immediately preceding page can be replayed from the point at which it was left.
4. The PLAY command is used to resume playback after the STOP command is used to stop playback. The PLAY command causes playback to restart at the point it stopped following the STOP command.
5. As mentioned above, the PRESET command is used to add a new entry to the bookmark list. It causes the browser to add a link to the current page in the bookmark list, along with the name of the link. The browser may, for example, prompt the user to verbalize the name of the link in order to add an entry to the bookmark list, or it may take the name of the link from the page in the memory cache. The bookmarked link is entered as an HAML link descriptor, as described above.
6. The GO command prompts the browser to start playing back the bookmark list as a repeating stream, thereby treating the bookmark list as a variant of the directory system described previously. After the GO command is used, the system proceeds until the user uses the STOP command in order to create a dynamic menu window, or the FORWARD or BACK commands to perform a binary search of the bookmark list.

Web pages in the WWW can be queried using text strings. Therefore, a WWW page may contain databases of information, such as city-by-city weather data, catalogs, and the like. A similar feature is provided for the Audio Web.

According to the present invention, a user queries an audio page by sending an audio string and receiving corresponding audio information in response. When presented with such a page, the client waits for the user to verbalize an query and send the request to the server using the AUDIO-SEARCH method described above.

Such audio querying requires either accurate, speaker independent speech recognition ability with a sizable vocabulary, or, in the alternative, means to "approximately match" audio streams.

The concepts related to the Audio Web, as disclosed herein, are particularly adaptable to radio listening. Therefore, the Digital HyperRadio ("DHR") is also presented here in accordance with the present invention.

In order to illustrate the concept of DHR, a comparison is made in FIG. 6 to the radio transmissions of an international radio broadcast by, for example, the British Broadcasting Corporation ("BBC"). An individual listening to the BBC in New York City, for example, would tune a radio to a frequency used by a BBC repeater station. Using DHR, however, a list of hyperaudio links are broadcast using part of the available frequency band, in a manner similar to the explanation above. In effect, a radio transmission has the format of an Audio Web page using the HAML format. Each hyperaudio link points to a respective Audio Web server which provides more information about the topic named in the link. In this arrangement, therefore, the audible broadcast radio transmission consists only of news headlines, for example, while the respective full news stories are obtained in the Audio Web pages pointed to by the radio transmission

"page". Using a specially equipped radio transceiver as the client, a listener stops the transmission of the news headlines, get a menu of links, select a topic of interest, and download the corresponding full news story from an Audio Web server.

The links might also point to other radio broadcast frequencies to which the radio transceiver is automatically tuned after the selecting the corresponding link. These transmissions, for example, provide expanded information on the topic carried in the initial broadcast, or offers a more elaborate list of choices.

It will be appreciated that the concepts described herein may be usefully applied to other forms of media.

For video information, directory pages might consist of cyclical streams of "trailers" (i.e., short clips from programs used to entice a viewer to view the entire program). The user stops the directory stream using the STOP command, and a dynamic menu window is created. The menu window displays five (for example) video still frames, one from each of the five trailers shown immediately prior to the use of the STOP command. The user then chooses one of the programs by inputting ONE, TWO, . . . , FIVE. Preferably, each trailer shown in the initial directory page would be overviews of a common topic, such as "Music". Thus, having selected on the initial trailers, the user sees another cyclical stream of trailers related to the common topic of the initial trailer.

Once the right video page is found, the user receives the page as a video program. The page also includes hypervideo links that each point to a different video page. As with the Audio Web, the user stops the video playback at any time during the program and builds the dynamic menu window of the last, for example, five hypervideo links identified in the program up to that point. Selecting one of the hypervideo links from the menu causes the client to download the corresponding video program from a server and start playing it.

Video pages according to the present invention are formatted in a manner similar to audio pages, with hypervideo links having the format  $\langle i: t_i^b, t_i^e, \text{address} \rangle$ , where  $t_i^b$ ,  $t_i^e$  represent the beginning and end, respectively, of the frame that serves as the hypervideo link name.

Preferably, the client for this format is implemented with an interactive television unit, with a remote control unit with appropriate push-button inputs for the above-described commands. Advantageously, the data bandwidth needed to send commands uplink (to a proxy client running the software) is minimal.

Text information is also managed according to the present invention. For example, a ticker-type display of text can be used to show a cycling directory page. As before, the user stops the display at a desired location, builds a dynamic menu window, and selects an item of interest. When the desired text page is reached, it is displayed in a limited state, or elsewhere, if an extra real state is available.

Hypertext links are encoded in a manner similar to hyperaudio and hypervideo links, using tuples in the form  $\langle i: b, e, \text{address} \rangle$ . The only difference is that  $b$  and  $e$  represent the displacement relative to the beginning of the text stream in bytes, instead of elapsed time.

Using TextWeb, a user uses a hand-held computer unit (sometimes known as Personal Digital Assistants, or PDAs) as the client. A PDA typically has limited computing ability and a small visual display. Nonetheless, the user can satisfactorily use a PDA to display directory pages, dynamic menu windows, and text pages. Moreover, the user may request full text pages to be sent to other devices where they can be more easily read, such as a fax machine in a fax-on-demand mode.

## 11

Finally, a multimedia web is implemented by combining audio, video, and text into displays. In this case, all three media would be first class objects. At each stage of the web concept, the user receives multimedia information in accordance with the concepts describe above, relative to audio, video, and text.

It will be appreciated that this invention encompasses new browsers and navigators for the WWW as well. In particular, cyclical directories may be incorporated into the currently known methods of WWW navigation.

What is claimed is:

1. A wide area information system comprising:  
at least one server having at least one audio page, each of said at least one audio page having audio data and linked by cross-reference to at least one other audio page, and means for recognizing sound commands; and  
a client communicating with said at least one server so that said audio data can be selectively transferred to said client without text or a visual interface upon said at least one server receiving said sound commands.
2. The system in accordance with claim 1 wherein said at least one server includes more than one audio page arranged in a stacked hierarchy.
3. The system in accordance with claim 2, wherein said stacked hierarchy includes a home page at a topmost level, said home page having the first audio data selectively transferred to said client.
4. The system in accordance with claim 3, wherein said home page is a directory page having audio data corresponding to a repeating audio track.
5. The system in accordance with claim 4, wherein said repeating audio track includes a plurality of cross references to audio pages in a level of said hierarchy below said home page.
6. The system in accordance with claim 5, wherein said hierarchy includes a bottom-most level containing at least one page with at least one cross reference link to at least one other page.
7. The system in accordance with claim 6, wherein said hierarchy includes at least one intermediate level above said bottom-most level, said at least one intermediate level having at least one page with at least one cross reference link to a page in a level of said hierarchy above said one intermediate level, and at least one cross reference to page in a level below said at least one intermediate level.
8. The system in accordance with claim 7, wherein said client includes means for controlling the transfer of said audio data from said at least one server and for making audible said audio data transferred from said at least one server.
9. The system in accordance with claim 8, wherein said means for controlling the transfer of said audio data includes means for inputting commands for controlling said repeating audio track of said directory.
10. The system in accordance with claim 9, wherein said means for inputting commands includes means for inputting a command to stop playback of said repeating audio track.
11. The system in accordance with claim 10, wherein said client includes means for identifying a subset of said plurality of cross references in said repeating audio track immediately prior to receiving said command to stop playback of said repeating audio track.
12. The system in accordance with claim 11, wherein said client includes means for selecting one of said cross references in said subset.
13. The system in accordance with claim 12, wherein said means for identifying a subset of said plurality of cross references generates an audible list of said cross references in said subset.

## 12

14. The system in accordance with claim 13, wherein said cross references in said subset correspond to a set of cardinal numbers, wherein said means for inputting commands for controlling said repeating audio track include means for inputting a cardinal number for selecting one of said cross references in said subset whereby a page corresponding to said selected cross reference is transferred to said client via said audio data transfer connection.

15. The system in accordance with claim 14 wherein said means for inputting commands includes means for inputting a resume playback command of said audio track.

16. The system in accordance with claim 15 wherein said means for inputting commands includes means for inputting search commands whereby said repeating audio track can be searched to find a desired cross reference.

17. The system in accordance with claim 16 wherein said search commands include a forward command for advancing playback of said repeating audio track, relative to a given instant, by an interval of time, and a back command for receding playback of said repeating audio track, relative to given instant, by an interval time.

18. The system in accordance with claim 17 wherein said intervals of time by which playback of said repeating audio track is advanced or receded are variable in accordance with a binary search algorithm.

19. The system in accordance with claim 18 wherein said intervals of time by which playback is advanced or receded progressively decrease in correspondence to repeated inputs of said forward and back commands.

20. The system in accordance with claim 1, wherein said client further comprises means for making said audio data transferred to said client audible.

21. The system in accordance with claim 20, wherein said client comprises means for inputting a plurality of cardinal numbers and at least one command action.

22. The system in accordance with claim 21 wherein said means for inputting a plurality of cardinal numbers and at least one command action comprises a keypad having respective keys or combination of keys that are mapped to respective ones of said plurality of cardinal numbers and to said at least one command action.

23. The system in accordance with claim 22 wherein said client comprises a telephone having said keypad and an earpiece, and wherein said one at least one server is provided with means for recognizing tones generated by said telephone when said keys or combination of keys are pressed and wherein said means for making said audio data audible includes means for making said audio data audible in said earpiece.

24. The system in accordance with claim 22, wherein said client comprises a computer having a sound generation device and a keyboard, wherein said keyboard comprises the cardinal number input and at least one command action means, and wherein said means for making sound data audible includes means for making said audio data audible in said sound generation device.

25. The system in accordance with claim 21, wherein said means for inputting a plurality of cardinal numbers and at least one command action comprises means for recognizing spoken words corresponding to said plurality of cardinal numbers and at least one command action.

26. The system in accordance with claim 15, wherein said client comprises a telephone having a mouthpiece and an earpiece, and wherein said spoken words are received through said mouthpiece and said at least one server is provided with means for recognizing said spoken words and wherein said means for making said audio data audible includes said earpiece.



## 13

27. The system in accordance with claim 1, wherein said client includes means for identifying one of said at least one audio page with a user-created cross-referencing bookmark whereby said page is directly selectable for transfer from said at least one server to said client by selecting said bookmark.

28. The system in accordance with claim 27, wherein said client includes means for storing a plurality of said user-created bookmarks.

29. The system in accordance with claim 28, wherein said client further includes means for deleting said bookmark.

30. The system in accordance with claim 29 wherein said means for storing a plurality of bookmarks includes means for accumulating a list of bookmarks organized as a directory page.

31. The system in accordance with claim 1, wherein said client includes a memory cache having the capacity to hold at least one of said at least one audio page while a current audio page is being played by said client.

32. The system in accordance with claim 31, wherein said client includes means for moving between said current audio page and said audio page held in said memory cache.

33. In a wide area information system having at least one server, each server having at least one audio page having audio data and means for recognizing sound commands, and a client, and wherein information is stored entirely in the form of the audio page and the system is navigated without the use of text or a visual display, a method for presenting the audio data to a user comprising the steps of:

- establishing a connection from the client to the server;
- sending a sound request message having an identifier from the client to the server for one of said at least one audio page;
- receiving at the client said requested audio page having audio data identified by said message request from the server;
- ending said connection; and
- presenting, at the client, said received audio page to the user.

34. The method in accordance with claim 33 wherein said step of receiving further comprises the substep of transmitting from the server said audio page identified by said message request, and wherein said audio page includes a pagetype identifier for indicating that said audio page is a directory page having a repeating audio track or an audio web page having a linear audio track and hyperaudio links after said audio tracks, said hyperaudio links having a link number, a pair of elapsed times, and an address to which said hyperaudio links points.

35. The method in accordance with claim 34 wherein said presenting step further includes the steps of:

- providing, at the client, a selection menu having a plurality of choices to the user, each of said plurality of choices corresponding to a portion of said received audio data;
- selecting, at the client, one of said plurality of choices corresponding to a portion of said received audio data from said selection menu; and
- transferring said portion of said received audio data from the client to the server such that said audio data corresponding to said selected one is received at the client.

## 14

36. The method in accordance with claim 35 wherein said presenting step further includes the step of converting said transferred audio data into audible sound.

37. The method in accordance with claim 36, wherein said step of providing a selection menu comprises:

- presenting a first set of said plurality of choices in a sequence;
- stopping said presentation of said first set of plurality of choices; and
- presenting a second set of choices from among said first set of a choices whereby said second set makes up said selection menu.

38. A system for presenting audio information to a user comprising:

- at least one server having one or more audio pages stored thereon, said audio pages having audio data and linked by cross-reference to at least one said other audio page, and means for recognizing sound commands; and
- a client having means for selectively requesting and receiving one of said audio pages from said server.

39. The system in accordance with claim 38 wherein said client further comprises:

- means for presenting said audio data received in said audio pages to the user; and
- means for recognizing a plurality of inputs and a set of commands received from said user.

40. The system in accordance with claim 39 wherein said present means comprises means for making said audio data received in said audio pages audible.

41. The system in accordance with claim 40 wherein said means for recognizing a plurality of inputs and a set of commands comprises means for mapping each of or a combination of a plurality of cardinal numbers to respective ones of said inputs and to said set of commands.

42. The system in accordance with claim 41 wherein said at least one server includes more than one audio page and wherein said one or more audio pages are arranged in a stacked hierarchy having a home page at the uppermost level, an audio web page at the bottom-most level, and at least one intermediate level above said bottom-most level, said at least one intermediate level having at least one page with at least one cross reference link to a page in a level of said hierarchy above said one intermediate level, and at least one cross reference to page in a level below said at least one intermediate level.

43. The system in accordance with claim 42 wherein said means for inputting commands includes means for inputting search commands whereby said repeating audio track can be searched to find a desired cross reference.

44. The system in accordance with claim 40 wherein said means for receiving one of said audio pages comprises means for receiving radio transmission broadcasts having said audio pages, wherein each said cross-reference points to one of said at least one server, and wherein said client comprises a radio transceiver.

\* \* \* \* \*

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 5,926,789  
DATED : July 20, 1999  
INVENTOR(S) : Barbara et al.

Page 1 of 1

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Column 12,

Line 61, after "claim", delete 15 and insert -- 25 --.

Signed and Sealed this

Twenty-seventh Day of November, 2001

Attest:

*Nicholas P. Godici*

Attesting Officer

NICHOLAS P. GODICI  
Acting Director of the United States Patent and Trademark Office



US005695401A

**United States Patent** [19]

Lowe et al.

[11] **Patent Number:** 5,695,401[45] **Date of Patent:** \*Dec. 9, 1997[54] **PLAYER INTERACTIVE LIVE ACTION  
ATHLETIC CONTEST**

[75] **Inventors:** Danny D. Lowe, 37 Woodhaven View,  
S.W., Calgary, Alberta, Canada; Gordon  
G. Wilson, Calgary, Canada; Michael  
E. Baker, 2712 17 St. N.W., Calgary,  
Alberta, Canada, T2M 3S4; Abram  
Gamer, 139 Oakside Circle S.W.,  
Calgary, Alberta, Canada, T2V 3H4

[73] **Assignees:** Gordon Wilson; Danny D. Lowe;  
Michael E. Baker; Abram Gamer, all  
of Calgary, Canada

[\*] **Notice:** The term of this patent shall not extend  
beyond the expiration date of Pat. No.  
5,462,275.

[21] **Appl. No.:** 348,731[22] **Filed:** Dec. 2, 1994**Related U.S. Application Data**

[63] **Continuation-in-part of Ser. No. 811,226, Dec. 20, 1991, Pat.  
No. 5,462,275.**

[51] **Int. Cl.<sup>6</sup>** ..... A63F 9/00[52] **U.S. Cl.** ..... 463/4; 364/410; 463/31;  
463/35; 463/43[58] **Field of Search** ..... 463/4, 31, 35,  
463/43; 364/410[56] **References Cited****U.S. PATENT DOCUMENTS**

4,249,735 2/1981 Bromley ..... 273/94  
4,304,404 12/1981 Pundt ..... 273/85 G  
4,327,915 5/1982 Bromley ..... 273/94  
4,342,454 8/1982 Baer et al. .... 273/85 G  
4,357,014 11/1982 Baer et al. .... 273/85

4,391,444 7/1983 Bromley ..... 273/94  
4,422,639 12/1983 Del Principe et al. .... 273/94  
4,582,323 4/1986 Minkoff et al. .... 273/94  
4,662,635 5/1987 Enokian ..... 273/94  
4,766,541 8/1988 Bleich .....  
4,799,677 1/1989 Frederiksen ..... 273/435  
5,026,058 6/1991 Bromley ..... 273/88  
5,067,079 11/1991 Smith, III et al. .... 364/410  
5,462,275 10/1995 Lowe et al. .... 463/4

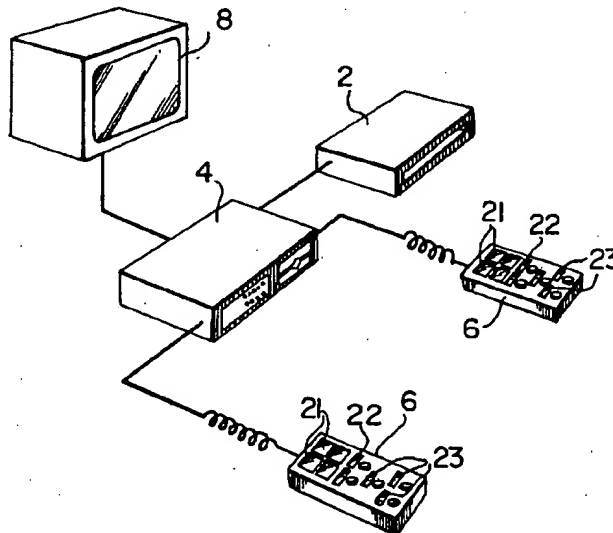
**FOREIGN PATENT DOCUMENTS**

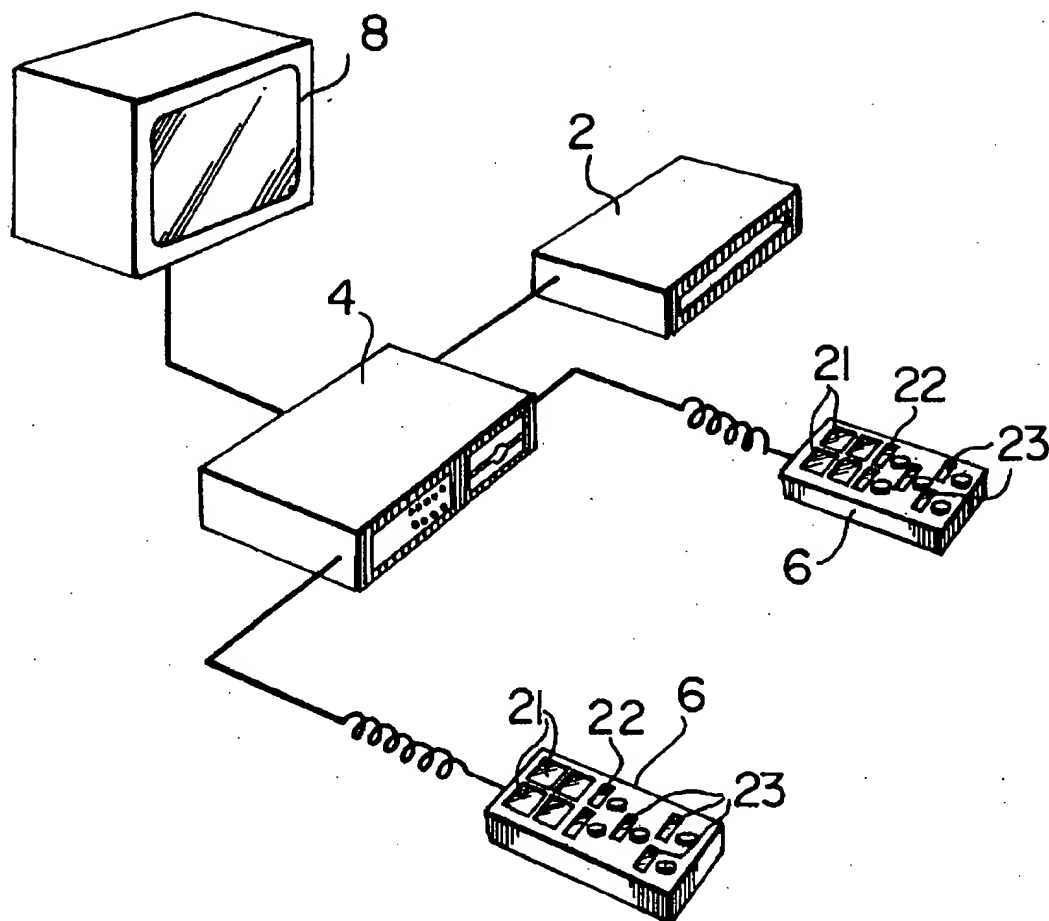
1221761 5/1987 Canada .  
1232093 1/1988 Canada .  
1236217 5/1988 Canada .  
8302566 8/1983 WIPO .

*Primary Examiner*—William H. Grieb  
*Attorney, Agent, or Firm*—W. Charles Kent; William R.  
Edgar; R. Lewis Gable

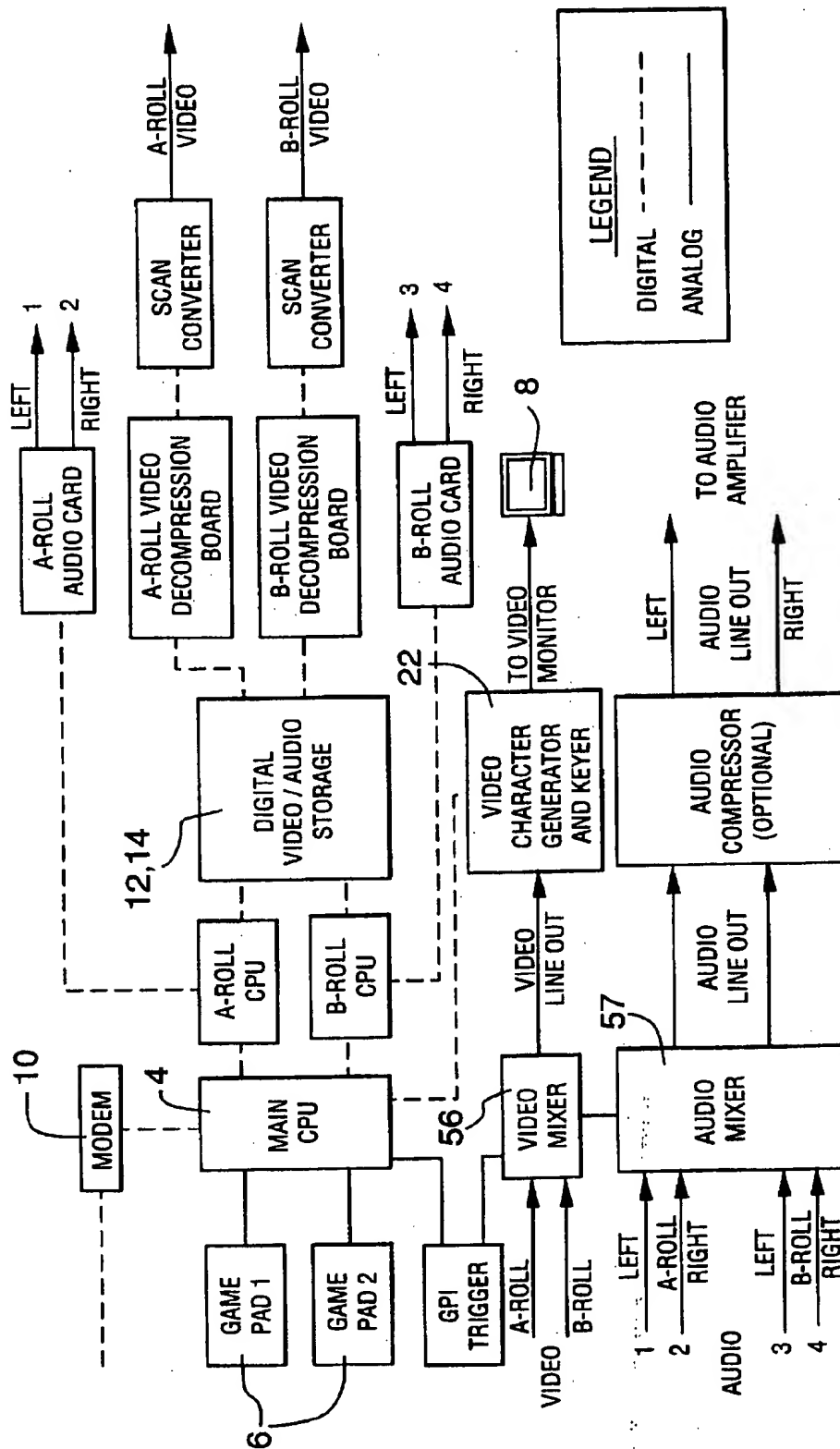
[57] **ABSTRACT**

A player interactive live action football game which may be played for example on a television screen. A player interactive live action football game is provided which comprises a random access storage and retrieval device and a plurality of individual, pre-recorded action football plays illustrating interaction of players of opposite teams. This information is stored in random access storage and retrieval device and accessible according to type of play. The invention further comprises a microprocessor and microprocessor control device electronically associated with the random access storage and retrieval device. The microprocessor is programmed to enable one or more users to select in sequence, through the control device, different football plays according to play type. A display device is electronically associated with the microprocessor to enable the selected plays to be viewed by the users. The microprocessor is further programmed to evaluate and cumulate play results and report them to the users in a meaningful way.

**14 Claims, 5 Drawing Sheets**



**FIG.1**



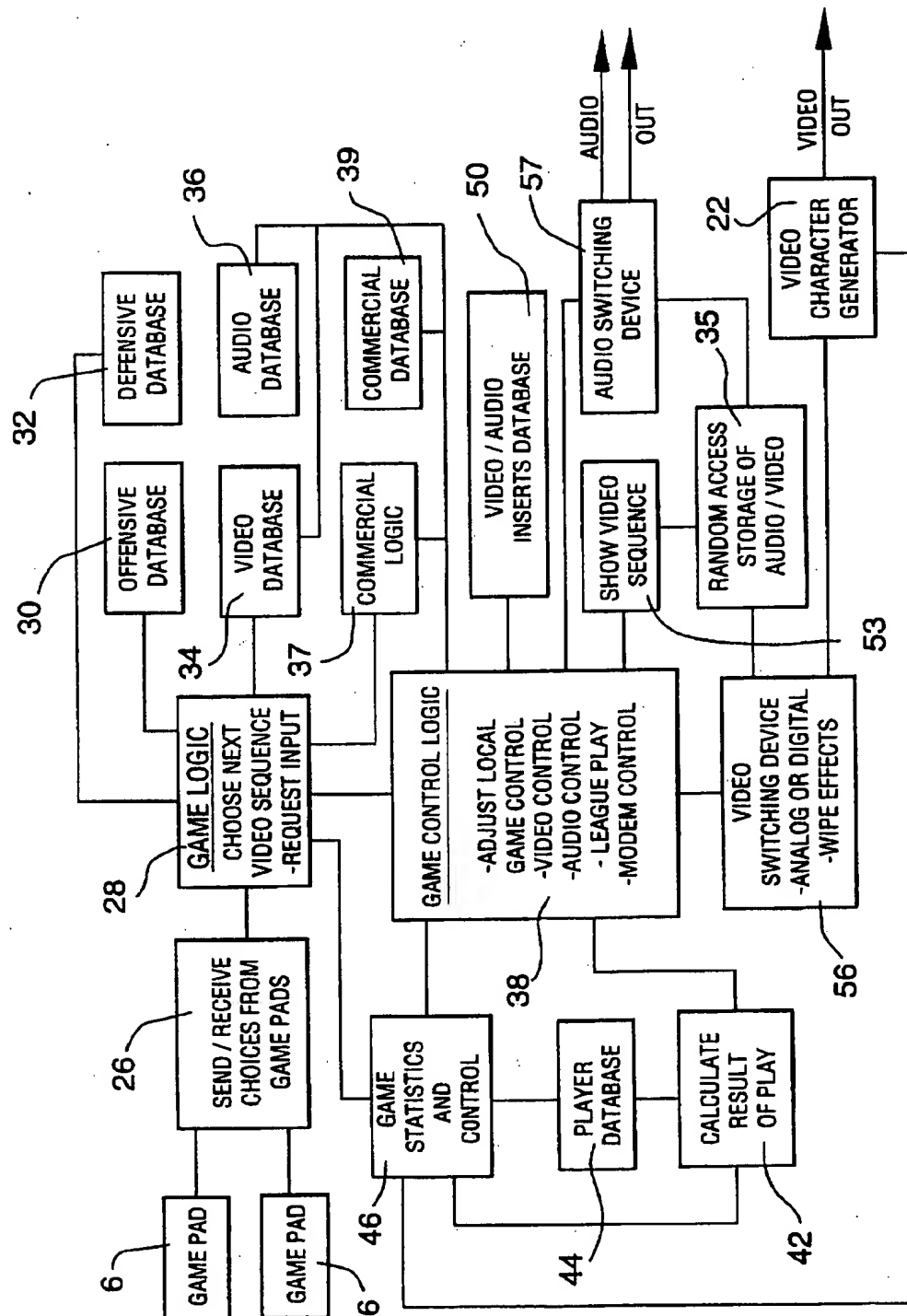


FIG. 3

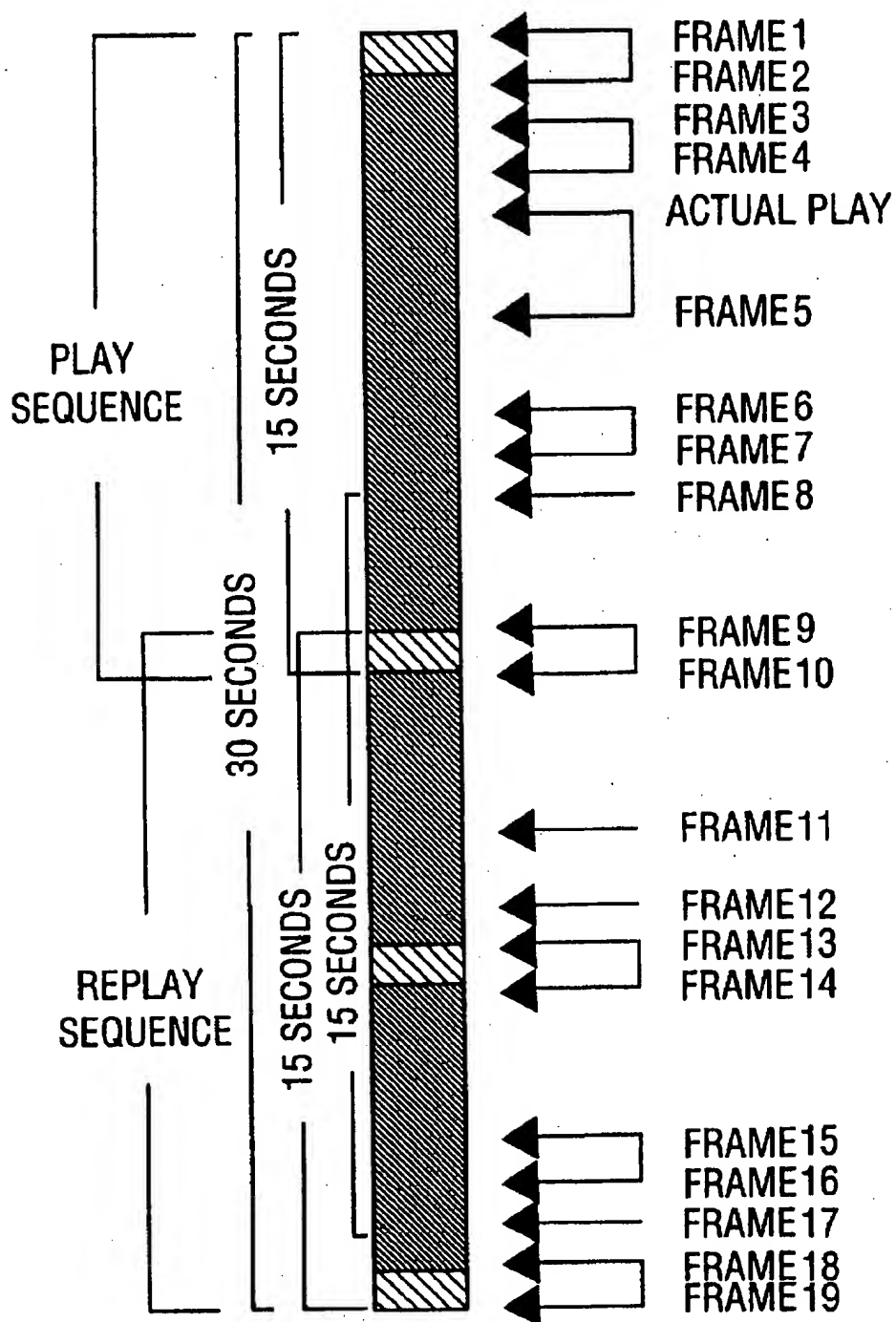


FIG. 4

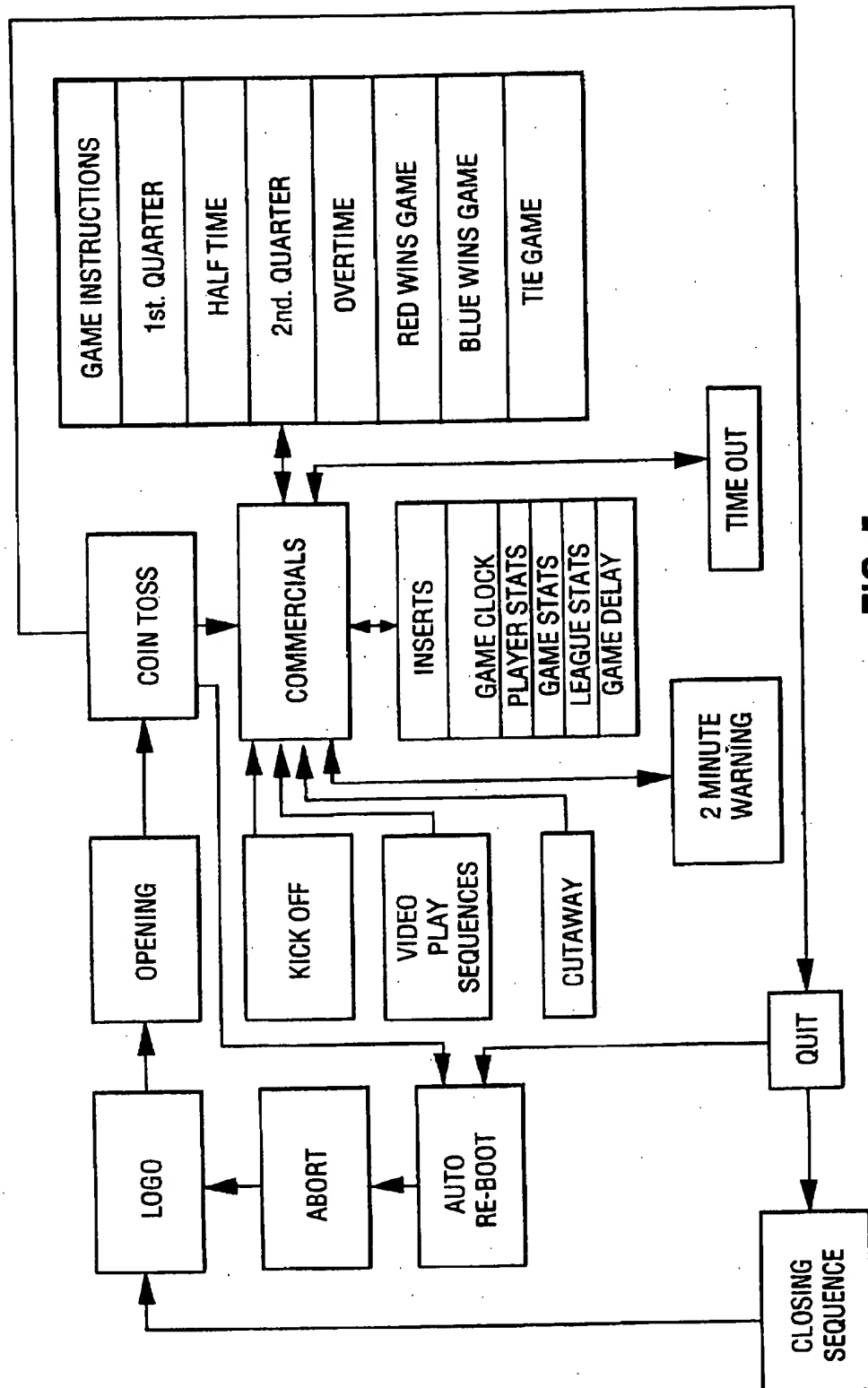


FIG. 5



1

## PLAYER INTERACTIVE LIVE ACTION ATHLETIC CONTEST

The present application is a continuation-in-part of application Ser. No. 07/811,226 filed Dec. 20, 1991, now U.S. Pat. No. 5,462,275.

### FIELD OF THE INVENTION

The present invention relates to a player interactive live action athletic contest such as a football game which may be played for example on a television screen.

### BACKGROUND OF THE INVENTION

Video games featuring sports including football are well known. Such video games generally incorporate computer generated graphics stored in a memory and accessed by a computer. Examples of such computer graphics video games are described and illustrated in Canadian Patent No. 1,221,761 issued May 12, 1987 of Hueda et al, Canadian Patent No. 1,236,217 issued May 3, 1988 of Bromley et al and Canadian Patent No. 1,232,093 issued Jan. 26, 1988 of Tatsumi et al.

U.S. Pat. No. 4,766,541 issued Aug. 23, 1988 of Bleich et al describes and illustrates a video game or the like which includes a real time interactive video disc game-play background generation system. The discs contain video data which is under the control of the game processor, whereby the sequence of frames to be played can be varied on a frame by frame basis.

Other references of general background interest teaching electronic simulated sports games include U.S. Pat. No. 4,662,635, Enokian issued May, 1984; U.S. Pat. No. 4,304,404, Pundt issued December, 1981; U.S. Pat. No. 4,799,677, Frederikson issued January 1989; U.S. Pat. No. 5,026,058 issued June, 1991 and U.S. Pat. No. 5,067,079, Smith et al issued November, 1991. Of particular interest, U.S. Pat. No. 4,662,635 of Enokian teaches that video images of players engaged in a series of athletic plays be displayed on a television screen while the field position is calculated and displayed on a separate, lighted panel representing a football field.

### SUMMARY OF THE INVENTION

In accordance with the present invention a pre-recorded, live action and sound, full motion video, interactive athletic contest which comprises players of opposite teams playing at various positions on a background field. The game comprises a random access storage and retrieval means, the random access storage and retrieval means for storing a plurality of individual, pre-recorded video images representative of live action plays of the athletic contest illustrating interaction of players of the opposite teams. The game further comprises a microprocessor and microprocessor control means electronically associated with said random access storage and retrieval means for enabling one or more users to select in sequence through said control means different ones of said plays according to play type, the microprocessor then, by using statistical tables, to select the video image of the actual play according to play type selected by the user. A display means is electronically associated with said microprocessor enabling the selected plays to be viewed by the users. The microprocessor is further programmed to evaluate and accumulate play results and report them to the users in a meaningful way.

Preferably the live action football plays are recorded on a football field complete with all markings normally found in

2

an American style football game, with a limited number of field positions from which the ball can be scrimmaged so that all plays originate and complete on one of a limited number of pre-selected lines of scrimmage.

The football game according to the present invention may store the video material using laser disc technology CD-ROM, computer hard drive or other storage means allowing random access retrieval, and may also store audio material for real-time playback of voice, music and sound effects. The game as played appears to the viewers to be a real television broadcast of a live game, the content of which is dictated by selections of plays by the users.

The game according to the present invention is unique in that it permits the viewer to interact with what appears to be an actual televised professional American style football game.

In order to make this game appear to be an actual televised football game, several unique design features are used. First, there are no prompts or messages to the game players appearing on the television screen since these or any other "computer game" type of instructions would not appear in a real television broadcast. All game instructions and player prompts are issued through the individual game controllers controlled by the game players. These game controllers feature a display means to prompt players with game status messages and request input response to effect proper game play. The television screen only displays what would normally be seen in a real televised game.

Secondly, the video display sequences (e.g. opening, closing, football plays, commercials, status screens etc.) are in "video" terms, each video sequence is edited in real time to the previous video sequence with a simple "cut" edit or with a "dissolve" or "wipe" video transition effect. The end visual result is a continuous video/audio display without any pauses, gaps or break in the video/audio display. The dissolve or wipe transitions require the extensive generic mapping of each video sequence as described later in this document and illustrated in FIG. 4 so that two video sequences may be properly controlled and timed so that the end of the previous video sequence overlaps the start of the next video sequence so that the wipe or dissolve can be properly displayed. This technique is known in the video production industry as an "A/B Roll Edit".

Thirdly, not apparent in the display means, but necessary to produce the above described video transitions, the computer software and the hardware video display drivers (whether they be for NTSC video playback of laser video disc or video decompression and playback of digital video from hard drive or CD-ROM or the like) must be capable of controlling two video display devices simultaneously in real time so that the A/B rolls overlap.

It is an object of the present invention to provide an interactive, live action football game that can be played by one or more persons in a home, bar or the like. It is a further object of the present invention to provide such a television game which permits the players to select full motion video images, as opposed to computer generated graphics, to play such game and determine the outcome.

### BRIEF DESCRIPTION OF THE DRAWINGS

These and other objects and advantages of the invention will become apparent upon reading the following detailed description and upon referring to the drawings in which:

FIG. 1 is a schematic view of the game components of the game in accordance with the present invention;

FIG. 2 is a schematic block diagram showing the component layout of the game according to the present invention;

3

FIG. 3 is a software block diagram of the game of the invention;

FIG. 4 is a schematic diagram of a video play sequence breakdown for the game in accordance with the present invention;

FIG. 5 is a video sequence flow chart showing the various video pathways required in accordance with the invention to link the video sequences together to create a continuous, realtime game.

While the invention will be described in conjunction with an example embodiment, it will be understood that it is not intended to limit the invention to such embodiment. On the contrary, it is intended to cover all alternatives, modifications and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

#### DETAILED DESCRIPTION OF THE INVENTION

In the drawings, similar features have been given similar reference numerals.

FIG. 1 illustrates schematically the various hardware components of the football game system in accordance with the present invention. A random access storage and retrieval means 2, preferably a laser disc storage device 1 is electronically associated with a microprocessor 4, control modules 6 and T.V. monitor 8 as illustrated. Laser video disc storage device 2 preferably additionally provides for storage and retrieval of audio information on audio channels. Alternatively, audio information may be stored on a separate, audio storage means (not illustrated) with audio information being correlated to video information by means of microprocessor 4.

In more functional terms, the main components of the game system according to the present invention are illustrated in FIG. 2. These components may be defined as eight basic components:

- 1) input devices 6
- 2) central processing unit 4
- 3) modem 10
- 4) video storage/retrieval means 12
- 5) audio storage/retrieval means 14
- 6) video/audio routing means 56, 57
- 7) T.V. monitor 8, audio amplifier and speakers
- 8) graphics character generation means 22

With the exception of the T.V. monitor and two game pad control modules 6, all of these components may be physically contained in a single enclosure or cabinet.

The input devices include the two game pad control modules 6 and a signal receiver (not illustrated) in main computer unit (CPU) 4. Game pad control modules 6 communicate to the signal receiver using either infrared pulses, ultrasonic audio waves or low powered radio waves with a pulse code modulated security code. The game pad control modules 6 preferably have five input buttons that control all game functions. Each input command on the game pad control module will be accompanied with an appropriate prompt on the game pad control module's LED or fluorescent LCD display. The display information is broken into four main sections:

- 1) prompt display
- 2) timer display
- 3) status display
- 4) input display

4

The prompt display is the main display 21, located near the top of the game pad controller, that will prompt the player for the next input or tell them to wait or display other such information. The display will flash a message soon as either the word <SELECT> or the word <WAIT>. To the right of this flashing prompt, on the same prompt display line, there will be a 20 character display that will indicate the type of selection required (i.e. Type of Play) or explain the wait condition (i.e. Time Out Called).

Preferably in the upper right corner of the game pad controller, there is a two digit numeric display 22 with large sized characters. This numeric display is the Clock Timer display and will indicate the amount of time left to enter a decision once a prompt has been issued. The preferred standard countdown during a play sequence will be from 15 or 20 seconds backward to zero. If an offensive call has not been made by that time, a Delay of Game Video Sequence will be played giving extra time to the offense to enter a decision. If no decision is entered by the end of the Delay of Game Video Sequence the game will be terminated and awarded to the other team.

In addition to the <SELECT> input prompt and the numeric Countdown Timer display, there is also a 14 character alphanumeric display 23 beside each of the 5 input buttons. These displays will identify the input command for each button. For example, if the prompt requests "<SELECT> Type of Play", then to the right of each of the 5 inputs buttons will be a display showing the type of play that button will select.

Example:

<SELECT>	Type of Play
	Run
	Pass
	Kick
	Time Out
	Quit

If "Run" is selected then the Prompt Display and the five Input Displays will change to read:

<SELECT>	Type of Run
	Run Left
	Up the middle
	Run right
	Time out
	Quit

It is not intended in this description to place an upper or lower limit on the number of types of play that can be selected and displayed on this screen. Since there are five input selection buttons described here there may be as many as five types of play used in the final release version of this game or on later upgrades and versions. If five types of play are offered then they would preferably be:

- Wide left
- Dive right
- Up the middle
- Dive right
- Wide right

There may also be as few as only two type of play offered, for RUN plays the display would preferably read:

- Left
- Right
- (blank)
- Time Out
- Quit

For Pass plays there would preferably be (but not limited to) one of the following variations:

Left	Left	Deep Left
Right	Center	Short Left
(blank)	Right	Up the middle
Time out	Time out	Short Right
Quit	Quit	Deep Right

It is not the intent in this description to limit the description of each play to only those used in these examples.

The selected response is then received by CPU 4 and processed along with other game factors, as will be described in more detail hereinafter, to determine which video play sequence or other video sequence (such as Time Out, etc.) will be used next. It will then communicate with the other components in the system to set up the next video sequence.

CPU 4 also locates where all video and audio elements are stored in video storage and retrieval means 12 and audio storage and retrieval means 14. Then commands are issued to the proper device controllers to cue up the first video and audio elements needed to start the sequence.

Video storage and retrieval means 2 can be any video storage system that has sufficient storage capacity for the required program, providing it is capable of random access, within the limited time frame of the parameters of the game, to all video and audio sequences stored in this medium. Suitable storage mediums that meet these requirements include laser video disc, CD-ROM compact disc and RAM hard drive. (Video stored in a digital format will probably use compression techniques such as Intel's "DVI System" (Trade-mark)). As new storage mediums are developed any medium meeting the storage and random access requirements of the present invention can be used.

The video images stored in this medium will be full motion video (i.e. thirty video frames per second). These images can be stored in analog form as on a Laser Video Disk (CAV or CLV formats), or as compressed digital data (CD-ROM) using video compression techniques. The resolution of the image may vary depending on the type of system used but in all cases the final video output will match the video system used in the country or region of use. In North America for example, the video output will be NTSC Standard. In Europe it will be a PAL/Secam dual format. A Standards Conversion Unit can be installed down stream from the system so that all images are stored and controlled in NTSC format with the final video output going through the Standards Conversion Unit converting it to PAL/Secam. The other alternative is to store and display the video data entirely in the local broadcast format used and, since the video frame rate for PAL/SECAM is 25 video frames per second, this would require rewriting the control program and data base to work with a video frame rate in base 25 rather than base 30.

The audio storage and retrieval means 14 can utilize several different formats. More than one of these formats may be utilized in the final design. The major storage format will be in accordance with the final video format used. If, for example, the final video format is Laser Video Disk, then most of the audio will be stored on the existing audio tracks used on Laser Video Disk. This format will permit the use of two audio tracks that share common frame numbers with the video portion. In other words, for each addressable video frame on the Laser Video Disk as there are two corresponding audio frames with the same address. Additional audio tracks can be located on other Laser Video Disks run in sync

with the main video sequence. Another possible source is a CD-Audio Company (Trade-mark) Disk running in sync with the video using a similar frame code addressing system. Digitized sound can also be stored on hard disk drive for extremely fast random access. Regardless of the storage format used, the audio storage requirements are the same as the video storage requirements in that they must have large capacity and random access capability within the limited time frame parameters of the game.

The graphic character generation means 22 generates graphics such as game statistics and players names for the video inserts and stats boards. This generator is required to generate characters and simple lines for underlining titles. It must generate several sizes of font in different colours.

In analog format all graphics are routed to the video/audio switcher(s) and graphics keying device 18 for insertion into the video picture. In digital format the graphic will preferably be inserted downstream from the video/audio switching device(s). The video/audio switcher(s) 18 can be either analog or digital. In analog form the device would be a standard video/audio switcher controlled by the main CPU through a General Periphery Interface (GPI). The video switcher would generate the wipe effects that link the video sequences together and it would include a graphics keying device. The graphics keying device enables the system to insert graphics over the entire picture (i.e. score inserts, statistics, players names etc.). In digital format the character generator would contain circuitry to insert or overlay graphics downstream from the video/audio switching device(s).

In analog format the video switcher also manages audio routing of the final mixed audio. In digital format the audio will be routed separately from the video picture and taken directly from the A-Roll/B-Roll audio cards (or audio outputs on the video decompression cards if available) to an audio switcher device.

There are a number of low cost analog switching devices available on the market. In the digital domain, video and audio switching as well as graphics keying can be handled with a number of "off the shelf" VGA to video adaptor cards currently available for the IBM platform. Many of these cards allow the use of wipes and keys in their basic format as well as a number of other Digital Video Effects (DVE) that can be incorporated into the production design of the program. Providing they support simultaneous video input and display from two pre-recorded video sources.

The modem 10 will operate under control of the CPU 4. During play it may feed control program information through to other game systems at other locations. When the system is not being used it will periodically report back to a central service center and database (not illustrated) supplying current information on usage for marketing analysis as well as reporting back to the service center for any trouble or equipment failure.

The software operating CPU 4 will be described now in more detail, having reference to the software block diagram of FIG. 3. The two game pad controller modules 6 are used to display information and options to the players and send the choices back to the computer via send/receive choices from game controllers 26.

The game logic 28 uses data from the send/receive choices from game pad controllers 26 to choose the next video sequence and to send information back to or request input from the game pad controller modules 6.

The offensive database 30 contains the information to rank the basic effectiveness of an offensive call.

The defensive database 32 contains the information to rank the effectiveness of each defence called versus the offense called.

The video database 34 contains information on every video sequence stored in random access storage of video/audio 35. The timing information for each video sequence is also located here and accessed by the video control logic 36.

The commercial logic or advertisement logic 37 works with the game control logic 38 to determine when and where commercials should be played.

The commercial or advertisement database 39 contains information on every commercial in random access storage and keeps a record of how many times and when each one is played.

The adjust local game control function of game control logic 38 will pass on information about the current video sequence to calculate the result of play at 42. The adjust local game control 38 also manages the logic for the timing and control of all video and audio sequences as well as the control program for the modem link.

The player database 44 contains the profile information on every player in the game. It is updated every time a result of play calculation is made.

The results of play calculations are also passed on to game statistics and control 46 which provides information on score, momentum, player and team performance and game control variables.

The video/audio inserts database 50 stores information on all inserts that are available to the video control logic.

The show video sequence 53 controls the driving of video and audio devices such as laser video disks, CD-Rom etc.

The random access storage of video/audio 35 contains all video and audio material. The number and types of devices may be intermixed and include such devices as laser video disk, CD compact audio disc, CD-Rom, computer hard drive and any other random access storage devices.

The analog or digital video switching device 56 and audio switching device 57 are controlled by the video game control logic 38 and switches between all video and audio signals. In analog format this device also contains a graphics keying device for keying in the graphics from the graphics character generator 22. In digital format the graphics keying will be downstream from the video switching device 56 and controlled by the video game control logic.

An important aspect of the game according to the present invention is the play sequence as illustrated in FIG. 4. This frame mapping, applied to all video sequences used in the game, gives the game software a standardized set of cueing and timing points to be used to facilitate the simultaneous and synchronized play of any two video sequences in order to perform a continuous series of seamless "A/B roll" video edits throughout the game. To illustrate this FIG. 4 represents the video play sequence which is the basic video unit of a Sports Active Television Football Game.

The video play sequence consists of two main parts:

- 1) REALTIME PLAY
- 2) SLOW MOTION REPLAY

In particular, the illustrated frame positions represent the following:

Frame Position 1 starts the video play sequence and marked the beginning of a 1 second wipe or dissolve video transition from the previous video sequence. This is also the start of the REALTIME PLAY portion of the video play sequence.

Frame Position 1 also marks the main edit in point for the audio track and unlike the 1 second video transition, the audio is a straight cut take.

It is important to keep clear and understand that although the main video edit point has already passed and the audio has been edited, the previous video sequence continues on until the 1 second wipe effect is finished at Frame Position 2.

Frame Position 2 marks the end of the 1 second video transition and the end of the previous video sequence.

The first optional audio window begins at Frame Position 3 and ends at Frame Position 4. This audio window is a 2.5 second portion of the existing sync dialogue of the Play By Play announcer that can be deleted without breaking continuity in the flow of the dialogue and replaced with a voice insert by the same announcer giving yardage and field position updates.

An important feature of the first optional audio window is that it occurs BEFORE the ball is brought into play.

The start of the actual football play (i.e. snap of the ball), is not recorded with a frame position number since it is not important in the timing of the video play sequence.

The end position of the actual play is important however since it occurs when the referee blows his whistle and the ball is taken out of play. The point at which the whistle is blown is designated as Frame Position 5. During normal game play the game clock will continue to run throughout the entire video play sequence except in the last two minutes of the first half and the last two minutes of the game. During these two 2 minute periods the game clock will stop at Frame Position 5 in every video play sequence and restart at Frame Position 1 in the next video play sequence.

Frame Position 6 and Frame Position 7 mark the location of the in and out points of another optional audio window. This window occurs after the ball has been taken out of play and a new field position and/or down has been established. This gives the Play by Play narrator the opportunity to say where the ball has ended up and what the down situation is so that the players in the bar can be informed for their next play decision.

NOTE: There will also be LED readouts of yardage and downs on each player's game pad display. These readouts will be dedicated to this specific function and visible to the players at all times during normal play of the game. (See Section 19—Main Component Layout)

Both audio windows at Frame Positions 3 and 4 and Frame Positions 6 and 7 as well as a third audio window to be described later at Frame Positions 14 and 15 are optional audio windows that will not be automatically used every time they occur. These audio windows will be used at random intervals to vary the structure of the video play sequence format. The amount of randomizing will be determined in Alpha/Beta testing of the prototype game and will probably favour the second audio window since it occurs after the current play has been completed, therefore the updated information in the second optional audio window (Frame Positions 6 and 7) is more useful to the bar players since they must now make their next play decision.

However, since it is intended to use all three optional audio windows to vary the format of the video play sequence, there may be occasions when more than one window is used in the same play. If more than one audio window is used during a video play sequence then it should be a combination of the first optional audio window (Frame Positions 3 and 4) plus one of the other two windows that occur after the ball is taken out of play. This would give the current yards and downs before the play and the new yards and downs after the play is completed. This type of audio insertion has the added benefit of making the Play by Play announcing appear to actually be in real time.

Frame Position 8 marks a timing location backtimed 22 seconds from the end of the video play sequence that will trigger the game pads to prompt for the next player input. This position is independent of the start of the slow motion replay portion of the video play sequence, but will always

occur after the ball has been called out of play. The exact location of Frame Position 6 will be the total number of seconds before the end of the video play sequence (Frame Position 18) that is needed to give the bar players 20 seconds to make their next play decision inputs, plus 1 second seek time to locate the next video sequence plus 1 second for the video transition.

Frame Position 9 marks the start of the video transition between the Realtime Play portion of the video play sequence and the slow motion replay portion. Frame Position 9 also locates the start of the next video sequence which would normally be the corresponding slow motion replay of the previous Realtime Play sequence however the slow motion replay may be occasionally substituted with a short commercial break or a player or game statistics graphic. If a substitution is made then then video or graphic sequence used should be of equal average length to the slow motion replay sequence which will be on average 20 seconds.

Frame Position 9 also marks the position at which the audio for the realtime play portion ends and the audio for the next sequence is taken up full with a straight butt cut edit.

Frame Position 10 marks the end of the 1 second video transition between the realtime play and the slow motion replay (or its substitute) portion of the video play sequence. It also marks the end of the realtime play portion of the video.

Frame Position 11 will locate the offense input deadline position for an optional edit out point. If the offense has entered both play decisions by Frame Position 11 then the video play sequence will end at the optional edit out point at the end of the video transition at Frame Position 14. If the optional edit out point is used then the audio for the slow motion replay will end at the beginning of the video transition at Frame Position 13.

If the offense has made their input decisions by Frame Position 11 in time to invoke the optional edit point, the defense will be warned that they only have 5 seconds left to enter their defense calls. This warning will be visual in the form of a flashing LED display such as the countdown timer on the game pad, or it can be with a dedicated warning light on the game pad that would light and possibly flash when the offense enters a quick play decision.

Frame Position 12 is the input deadline of the defense to enter a play decision when the offense has made a quick call and invoked the optional edit out point. If the defense fails to respond by this time then a default defense call will be entered for them. This default will give them a bad defensive call as if they were caught off guard by the offenses quick play decision and the offense will gain yards on the play.

Frame Position 12 will be located 1 second before Frame Position 13 to allow for seek time to locate the next video sequence. There will also be 1 second between Frame Position 13 and Frame Position 14 to allow for the 1 second video transition.

The exact location of Frame Positions 11, 12, 13 and 14 will always remain 5, 1 and 1 second apart respectively but will vary as a group relative to the video play sequence since each play is different and the optional edit out point must be at a place where both video and audio can be edited without a break in video or audio continuity.

The reason for the optional edit out point at Frame Position 13 is to give the bar players the ability to speed up the pacing of the game for either enjoyment or strategy, by entering their play decisions quickly, within the first half of the time period allowed for entering a normal input response. This optional edit out point will shorten the video play sequence by approximately 10 seconds.

Frame Position 13 is the start of the video transition for the optional edit out point, the end of the audio track for the previous video sequence and the starting position for the next video sequence and the edit in point for the audio track of this next sequence.

Frame Position 14 is the end position for the video transition as well as the end of the video for the previous video sequence.

Frame Position 15 is the location of the start of the third and final 2.5 second optional audio window for yardage and down inserts.

Frame Position 16 is the location of the end of the third and final 2.5 second optional audio window.

Frame Position 17 marks the normal input deadline for the players to call the next play when the optional edit out point has not been invoked by a quick play call from the offense. If no play has been called by the offense, there will be a short commercial break, if they haven't entered a decision after the break another commercial break will be called and if there is still no response after this second break then the game will be called as described in Section 9.

Frame Position 17 will occur 1 second before Frame Position 18 to allow for seek time for the next video sequence.

Frame Position 18 marks the beginning of the 1 second video transition to the next video sequence. Frame Position 18 is also the start position for the next video sequence and is the position where the audio for the current video sequence ends and is edited to the audio at the beginning of the next video sequence. Frame Position 18 will occur 1 second before Frame Position 19.

Frame Position 19 marks the end of the 1 second video transition and the end of the video footage for the current video play sequence.

Where a sequence of plays are to be undertaken, the first step in this sequence will be to cue the main video element, such as a video play sequence (selected from laser video storage retrieval means 12) at a location prior to the desired video material that will provide sufficient time for lockup or synchronization of the video picture. If for example the video lockup time is one second, the cue position for the video sequence will be one second or thirty video frames before the edit in point of the cued video sequence. Then when the current play sequence, already in progress, reaches a position one second (thirty video frames) before its "edit out point", the next video sequence will start to roll and sync up with the current video sequence.

When the current video sequence reaches its edit out point, the CPU 4 will issue a command to the video switching device to start the video transition (Wipe Effect Edit) between the two video sequences. Since both video sequences will now be synchronized together, when the current play sequence reaches its edit out point, the new play sequence will reach its edit in point at the same time. Once the edit point is reached, the edit will take place and the video transition will begin.

The video transition will always have the current play sequence move off screen (i.e. wipe) over top of the next video sequence when the next video sequence starts in real time. This is almost always the case but one example of an exception would be when we insert a graphic for game statistics. If this insert occurs during live video from the current play the Insert should wipe in over the current sequence. The video transition cannot exceed the length of the video portions of the video sequence.

Once the final Frame Position on the current video sequence has been reached, that video source will go off-line

and the new video sequence will continue as the current video sequence. In the meantime, the CPU 4 will be issuing similar instructions for the audio inserts that are to be inserted into the selected optional audio windows. It will determine whether the audio storage device is located and issue a command to the audio storage device to cue that insert an appropriate time ahead of the insert that will allow sufficient time for the audio to "lockup" with the video play sequence. When this position is reached, just prior to Frame Position 2 in the video play sequence, the audio disk will roll and get up to speed in synchronization with the video play sequence so that the starting location for the audio insert will correspond with Frame Position 2 (the beginning of the target audio window).

When the "in-point" at Frame Position 2 for the audio window is reached, the CPU 4 will instruct the video/audio switching device to mute the track containing the. Play by Play commentary and replace it with the audio insert. When Frame Position 3 is reached, the mute command will be revoked and the original Play by Play commentary will continue.

When the video play sequence reaches Frame Position 6 (FIG. 4), the CPU 4 will send a command back to the game controllers requesting the next input from the players for the next video sequence. This sequence will then repeat itself over again.

As to the question of grid lines, the pre-recorded action footage plays display normal field markings of yardage lines and numbers, with a limited number of lines of scrimmage available to the player, so that the results of each play used would be compatible with this limited number of lines of scrimmage.

More particularly, the live action football plays are recorded on a football field complete with all markings normally found in an American style football game. All plays originate and complete on one of a limited number of preselected lines of scrimmage. In a preferred embodiment of this variation of the game there is a minimum of 20 lines of scrimmage with this number limited only by the video storage capacity of each game unit and the attendant production and manufacturing costs. This is not intended to place an upper or lower limit on the number of lines of scrimmage covered by this invention since this game format would work for a lower limit of as few as eight lines of scrimmage and an upper limit limited only by the maximum number of lines of scrimmage in an American style football game.

Regardless of the number of lines of scrimmage used, those lines selected will be the only lines of scrimmage used within the game with the exception of certain procedural plays such as kickoffs and converts that always originate from a specific yard line. The selected lines of scrimmage will be the same for both teams and the same but in reverse order for both teams when they play in the opposite direction.

The video play sequence is a basic element of the football game according to the present invention. It is the actual football play itself. The video play sequence will include all runs, passes and kicks (including punts, field goals, converts and kickoffs, i.e. all football plays stored in video).

The video play sequence will consist of two main parts, the play and the replay.

The play portion will always be in real time and start prior to bringing the ball into play and end after the ball is brought out of play with the referee's whistle. If the real time action continues with events such as penalties, injuries, fights etc. the play portion of the video play sequence will continue

until no new action pertinent to the game occurs. Shortly after that, the game controllers will prompt their players to call their next decisions for the play.

The replay portion of the video play sequence will always start after the ball has been taken out of play and no more new action pertinent to the game occurs. The replay portion of the play sequence will recap the current play while the players are entering their next game decisions. The replay will always continue to the end of the video play sequence. In this way, the final frame of every video play sequence will always be either in slow motion, a freeze frame or a graphics insert and thus provide a universal edit point back into the real time motion of the beginning of the next video play sequence and avoid visual or audible continuity problems with the edit. The end of the video play sequence will always edit to the next video play sequence with a wipe effect so that it psychologically brings the viewer back into real time without causing time disorientation.

The video play sequence may be stored on laservideo disc, CD-Rom or other storage means in one of the two formats. The first format would be to split the play and replay portions of the play sequence onto two separate discs or storage means. The advantage of splitting the play sequence like this is that only one set of play sequences need be stored. The play portion of the play sequence would "A/B roll" edit to the replay portion stored elsewhere. During the playing of either sequence (i.e. play or replay), the program can then search the other storage means to locate the next sequence to be played.

The alternate format for storing the play sequences would be to store each play sequence intact with both play and replay already edited together. The advantage of this method is that the program needs only locate and edit one complete play eliminating the need to search for a separate matching replay sequence and editing that to the play portion of the play sequence. The disadvantage of this is that in order to "A/B roll" any two video sequences using this format, there must be a duplicate of each video sequence stored on or in a different storage means so that it can be located, cued and then played during playback of the current video sequence. This would double the required video storage space of the program.

When the coin toss sequence is completed and the program returns to the game from the commercial break, the first video play sequence, the opening kickoff, will take place.

Since the game players have already entered their calls for the type of kickoff (i.e. normal or short) during the commercial break at the end of the previous sequence (coin toss), the kickoff play sequence will go ahead without any additional player input. At the end of the kickoff, there will be an instant slow motion replay of the highlights of the current play while the game players are prompted, through their game controllers, to make two decisions.

First, they will be asked to select the type of play they want to call, either a run, pass or kick. They will also be given two other options at this time, time out and quit.

If the player calls time out and they have not used their allowed number of time outs, the game controller will ask if the player is sure (Y,N) and then either pause for the regulation time out period by going to a commercial break or, if told No, the game controller will ignore the time out request and continue with normal play.

Similarly, if a player enters a quit response, the game controller will ask the player if they are sure and then either end the game or continue the play, depending on the response. If a player does quit, the game is awarded, by default, to the other team.



If the players did respond correctly to the "select type of play" input command, they will be asked to enter the type of run, type of pass or type of kick they want to call.

This decision must be entered within a specified time limit. This time limit might be for example 30 seconds; however this may be reduced to as little as 15 or 20 seconds. Regardless of final time limits imposed on the players' decision making process, if the offense does not respond with a play decision within the allotted time period then the game will go to a delay of game video sequence where the announcer will announce that there is some type of holdup on the field and that there will be a short break for a commercial message while the players get back into their huddle.

Upon returning to the game from this commercial break, if a play decision has still not been made by the offense then the game will be called for some unusual reason such as "lack of interest".

In the event of a game termination due to lack of a players play decision response, the software program will store in non-volatile memory all current game data and statistics. In the event of a hardware failure (such as a game controller malfunction) this feature will allow players to resume the game at the same place and in the same situation that existed before the termination.

Termination of a game through a "Quit" response on the game controller will not save the current game position and situation since this will be a willful call on the part of the game players.

If the defense fails to respond to the same input commands, they will be given a default value in the game factors so that their chances for a successful blockage of the next play will be reduced. In other words, they were either too slow in making a defensive call or were caught off guard by the offense speeding up the offensive huddle (see below).

Both game controllers will display a timer that will indicate to the players the amount of time remaining before they are penalized for a late call.

The play sequence will also contain an optional edit out point at some position in the replay portion of the play sequence. There are several uses for this optional edit out point.

First, they can be used to help break up the repetitious sequencing of play/replay in play sequence. Since the cut-away sequences are well over 30 seconds in length they can be randomly inserted at these positions to cutaway to crowd, stadium and player's bench shots.

Second, they can be used for inserts of updates of game statistics or player statistics. During league play, it can also be used for inserting league statistics and live updates.

In both of these examples, the timing of the players input responses would not be changed and the offense would not give a quick response.

This "quick response" is the third example of usage of the optional edit out point. If the offense wants to speed up the pace of the game, they can do so by entering their two play decisions before Frame Position 5, thereby allowing the game control program to end the replay sequence before the maximum time allowed, but since it must always be at least 6 seconds before the actual edit out point, for it to make any difference to the 15 to 20 second prompt period, it will usually be found approximately half-way (or about 7 to 10 seconds) through the replay portion of the play sequence.

They will be given an indication of when their call has been quick enough to end the replay sequence early however, with the same visual cue on the timer display given to the defense (see below).

The defense on the other hand will be given a warning when the offense makes a quick call, the timer on the defensive player's game controller will start flashing and adjust to the remaining time left before the next optional edit out point at Frame Position 5.

This may seem unfair but remember that the offense knows when they have made their inputs and in a real game, they would approach the line of scrimmage and therefore visually warn the defence to hurry up their call so the defense must be given some kind of warning that the quick call has been made.

An example video sequence flow chart is illustrated in FIG. 5, showing the various video pathways that may be provided to link the video sequences together to create a continuous, real time game. (The first video image to appear on the screen after initial bootup, in the illustrated flow chart, is the manufacturer's logo). Commercials and inserts may be included, as illustrated, to help create the illusion that the game is being televised live. The video portion of such inserts might be either wide shots of the stadium and crowds or still pictures of individual players or team logos. These images may be combined with a graphics overlay of the information pertinent to the insert such as a player's statistics, current game statistics such as yards carried, passed, etc. League standing statistics or other information that can be compiled from database information may also be provided. The graphics overlays would be generated by the graphics character generator 22. The video insert could also be a game clock which could be used very effectively during the final moments of a game.

It will be understood that certain game factors may be affected through programming of CPU 4. Those factors include:

- 1) Team playing factors. Each team will have its own set of playing factors stored in memory. These factors will affect the outcome of the play, for example, a team with a high value of passing will have a better chance for completing a pass play than a team with a low passing play value.
- 2) Field position. There is an established system for determining the chances of success for a run or pass play according to the field position of that play. This system is used by quarterbacks and coaches to help them determine when it is best to run or pass. We will be using this system or a system similar to it to assign values to a called play according to its field position. This will be most evidenced in field goal attempts.
- 3) Momentum and Fatigue. As the game progresses, the teams will fatigue. We will already be including player response time in the game factors but we should also consider overall game fatigue so that the more physically demanding plays will be less successful near the end of the quarters and near the end of the game. However, there will be other game situation factors that will also be taken into account such as previous successes. In other words, when a team gets marching down the field, their morale will overcome factors such as fatigue to at least some extent and conversely would probably increase the defense fatigue.
- 4) Random chance. Not every play will be subject to a random factor, in fact, a random factor will only be occasionally included in the game factors. The frequency of this random factor will probably be less than 1 in 10 plays and possibly as low as 1 in 100 plays. It is included to provide sudden surprises in the play of the game and is not intended to replace the "player vs. player" aspect of the game. When the random factor is occasionally included, its affect on the outcome of the play will vary according to its value. A value

15

of 0 (if it is being added into the equation) or 1 (if it is being multiplied) will have the least effect whereas a value of 100 (or whatever the maximum value used) would have the most effect on the outcome of the play. When this maximum value or near maximum value is used it will overpower the other game factors and, depending on the value of these other factors, be the deciding factor in choosing the outcome of the next play. In this way even the worst possible call from the worst possible field position can result in a great play providing the random factor is used and its value is sufficiently large enough to overpower the other factors used. (Note: Penalties, fumbles and interceptions will not be determined on a random chance basis.)

When overall game factors are taken into consideration, this should still be a game of skill. When everything else is equal, the player who calls the right plays at the right time should do better than the player who calls it wrong. However, for any single play there will always be that random possibility that even the most novice player can score a touchdown from the worst possible field position. On the other hand, since the random factor is only occasionally used, it is also possible for a novice defensive player to guess exactly what the quarterback is going to do next and block any gains in yardage. A series of good guesses could effectively beat even a skillful experienced player.

In addition, several variations of control modules 6 and other types of input devices are envisaged:

- 1) Two input devices: This is the system described above and is the simplest form for public use.
- 2) Four input devices: By introducing four input devices into a bar area one input device can be designated for each offensive and defensive line on each team. In this way, since input devices will probably be physically attached to the table to prevent theft, this will now involve four tables in the bar, actively involving more patrons, making it more attractive to use.
- 3) Multiple input devices: It could also be beneficial to provide a multiple input system so that every table in the bar can become involved with this system. The microprocessor would determine which play is called by using the most common input. This could work exceptionally well with the following option.
- 4) Modem TV network: Since this game format will not be generating images in the sense that most "computer game" programs construct images based on current game conditions, the main CPU 4 will be mostly concerned with the sending and receiving of game play instructions and game play statistics, making decisions on which video sequences to play next and the locating and cueing them up for playback. In computer terms this is a relatively easy task and places only a relatively small load on the main CPU 4. Therefore, if two game machines are loaded with the same programs and video/audio sequences, a modem link of microprocessor control commands should be able to produce the same program at both locations at the same time. This would enable networking between game systems in different locations and enable emulation of a closed circuit television network.

Thus it is apparent that there has been provided in accordance with the invention a player interactive live action football game that fully satisfies the objects, aims and advantages set forth above. While the invention has been described in conjunction with specific embodiments thereof, it is evident that many alternatives, modifications and variations will be apparent to those skilled in the art in light of the foregoing description. Accordingly, it is intended to embrace

16

all such alternatives, modifications and variations as fall within the spirit and broad scope of the invention.

What we claim as our invention:

1. A pre-recorded, live action and sound, full motion video, interactive athletic contest comprising players of opposite teams playing at various positions on a background field, the game comprising:

- (a) a random access storage and retrieval means;
- (b) said random access storage and retrieval means for storing a plurality of individual, pre-recorded video images representative of live action plays of the athletic contest illustrating interaction of players of the opposite teams;
- (c) a microprocessor and microprocessor control means electronically associated with said random access storage and retrieval means for enabling one or more users to select in sequence through said control means different ones of said plays according to play type, the microprocessor then, by using statistical tables, to select the video image of the actual play according to play type selected by the user; and
- (d) display means electronically associated with said microprocessor enabling the selected plays to be viewed by the users, said microprocessor further programmed to evaluate and accumulate play results and report them to the users.

2. A game according to claim 1 wherein said random access storage means is selected from the group comprising laser disc, CD-ROM, computer hard drive and optical or magnetic storage means.

3. A game according to claim 1 further provided with audio storage and retrieval means, the audio retrieval means correlated with the individual pre-recorded live action plays and arranged so as to provide audio commentary corresponding to the plays displayed on the display means through speaker means electronically associated with the microprocessor and display means.

4. A game according to claim 1 further provided with audio storage and audio generation means including synthesis means, the audio generation means correlated with the individual pre-recorded live action plays and arranged so as to provide audio commentary corresponding to the plays displayed on the display means through speaker means electronically associated with the microprocessor and display means, said audio further selected to correspond to the yardage related to the play at any given time.

5. A game according to claim 3 wherein a plurality of individual commercial messages are stored in said random access storage means and accessed according to the time which has elapsed during play, said commercial messages to be displayed on said display means at predetermined times, and audio signals to accompany said commercial messages when displayed on said display means.

6. A game according to claim 1 wherein said display means are selected from the group comprising T.V. monitors and display screens.

7. A game according to claim 1 wherein said microprocessor is programmed to provide outcome play results based on stored team statistics incorporating a teams strength, momentum and fatigue.

8. A game according to claim 1, wherein said random access storage means is selected from the group comprising laser disc, CD-ROM, computer hard drive or optical or magnetic storage means, said game being further provided with audio storage and retrieval means, said audio retrieval means correlated with the individual pre-recorded live action football plays and arranged so as to provide audio



commentary corresponding to the plays displayed on the display means through speaker means electronically associated with said microprocessor and display means; said display means being selected from the group comprising TV monitors and display screens.

9. A game according to claim 1 wherein the pre-recorded plays are displayed on a normal field that includes markings of yardage lines and numbers, said game then to be played with a limited number of field positions from which the ball can be scrimmaged, the results of each play used therein being compatible with these limited number of field positions.

10. In a video game for generating and displaying on a display device a contest of opposing teams to be played by at least one user, each team comprising at least one character, the contest to be carried out at variable positions on a playing field, apparatus for displaying a selected one of a plurality of first images representing predetermined contest plays, said apparatus comprising:

- (a) means for storing said plurality of first images of contest plays;
- (b) means manually actuated for providing a signal indicative of a selected one of said plurality of first images of the contest plays to be displayed;
- (c) means responsive to said signal for accessing from said storing means the selected one first image of a contest play to be displayed;
- (d) means for determining the variable playing field position as a results of the contest of the selected one first image of a contest play; and
- (e) means for generating a second image relating to text and numerical information representative of cumulative team and player statistics as they apply to a contest in progress; and
- (f) means for superimposing said selected one first image of a contest play and said second image.

11. A pre-recorded, live action and sound with electronically generated graphics overlay, full motion video, interactive game to be played on at least one viewing screen by at least one user, said game comprising:

- (a) random access storage and retrieval means for storing a plurality of individual, pre-recorded football plays illustrating interaction of players of opposite teams, a plurality of individual commercial messages being stored in said random access storage means and accessed according to the time which has elapsed during play;
- (b) a microprocessor and microprocessor control means electronically associated with said random access storage and retrieval means for enabling at least one user to select in sequence through said control means different ones of said plays according to play type, said microprocessor then, by using statistical tables, to select the video image of the actual play according to play type selected by the user, said microprocessor further programmed to evaluate and accumulate play results and report them to the user in a meaningful way; and
- (c) display means electronically associated with said microprocessor for enabling the selected plays to be viewed by the users; said audio storage and retrieval means comprising audio retrieval means correlated with the individual pre-recorded football plays and arranged so as to provide audio commentary corresponding to the plays displayed on said display means through speaker means electronically associated with said microprocessor and said display means, said commercial messages to be displayed on said display means at predetermined times, and audio signals to accom-

pany said commercial messages when displayed on said display means;

the pre-recorded football plays are displayed on a normal field that includes markings of yardage lines and numbers, said game then to be played with a limited number of field positions from which the ball can be scrimmaged, with the results of each play used therein being compatible with these limited number of field positions.

12. A pre-recorded, live action and sound with electronically generated graphics overlay, full motion video, interactive game to be played on at least one viewing screen by at least one user, said game comprising:

- (a) random access storage and retrieval means for storing a plurality of individual, pre-recorded football plays illustrating interaction of players of opposite teams, a plurality of individual commercial messages being stored in said random access storage means and accessed according to the time which has elapsed during play;
- (b) a microprocessor and microprocessor control means electronically associated with said random access storage and retrieval means for enabling at least one user to select in sequence through said control means different ones of said plays according to play type, said microprocessor then, by using statistical tables, to select the video image of the actual play according to play type selected by the user, said microprocessor further programmed to evaluate and accumulate play results and report them to the user in a meaningful way; and
- (c) display means electronically associated with said microprocessor for enabling the selected plays to be viewed by the users; said audio storage and retrieval means comprising audio retrieval means correlated with the individual pre-recorded football plays and arranged so as to provide audio commentary corresponding to the plays displayed on said display means through speaker means electronically associated with said microprocessor and display means, said commercial messages to be displayed on said display means at predetermined times, and audio signals to accompany said commercial messages when displayed on said display means;

the pre-recorded football plays are displayed on a normal field that includes markings of yardage lines and numbers, said game then to be played with a limited number of field positions from which the ball can be scrimmaged, with the results of each play used therein being compatible with these limited number of field positions, and the pre-recorded football plays are seamlessly displayed in such a manner as to appear to be a live television broadcast.

13. A game according to claim 12 wherein the pre-recorded football plays are provided with mapping means comprising a standardized system of timing, cueing and edit points in order to achieve the seamless display and appearance of a live broadcast.

14. A game according to claim 13 wherein the pre-recorded football plays are provided with control means comprising a standardized system of timing, cueing and edit points so that a last portion of any video sequence being played overlaps a first portion of a next video sequence by a controlled and precise amount so that the next two video sequences can be edited together using video editing techniques selected from the group comprising dissolve, wipes, and other digital video effects.

\* \* \* \* \*

[54] SOUND-ILLUSTRATED, BOUND BOOK

[76] Inventor: Erich Döring, Im Hölzli, 9442  
Berneck, Switzerland

[21] Appl. No.: 407,941

[22] Filed: Aug. 13, 1982

[30] Foreign Application Priority Data

Aug. 21, 1981 [DE] Fed. Rep. of Germany ... 8124507[U]

[51] Int. Cl.<sup>3</sup> ..... G09B 5/06; B42D 1/00;

G11B 23/44; G11B 25/04

[52] U.S. Cl. .... 434/317; 281/38;

369/273

[58] Field of Search ..... 434/317; 369/273;

281/38

[56] References Cited

U.S. PATENT DOCUMENTS

916,036 3/1909 Scholes ..... 281/38  
1,502,312 7/1924 Mayhew ..... 369/273  
2,309,244 1/1943 Fey ..... 281/38  
3,193,295 7/1965 Isemura ..... 369/273 X  
3,321,208 5/1967 Nicholson ..... 369/273  
3,702,032 11/1972 Döring ..... 434/317

FOREIGN PATENT DOCUMENTS

2155910 4/1973 Fed. Rep. of Germany  
2001283 10/1973 Fed. Rep. of Germany  
2430377 1/1976 Fed. Rep. of Germany  
2358110 2/1977 Fed. Rep. of Germany  
707781 4/1931 France ..... 369/273  
14-16159 8/1939 Japan  
350118 12/1960 Switzerland ..... 369/273  
800996 9/1958 United Kingdom ..... 40/2

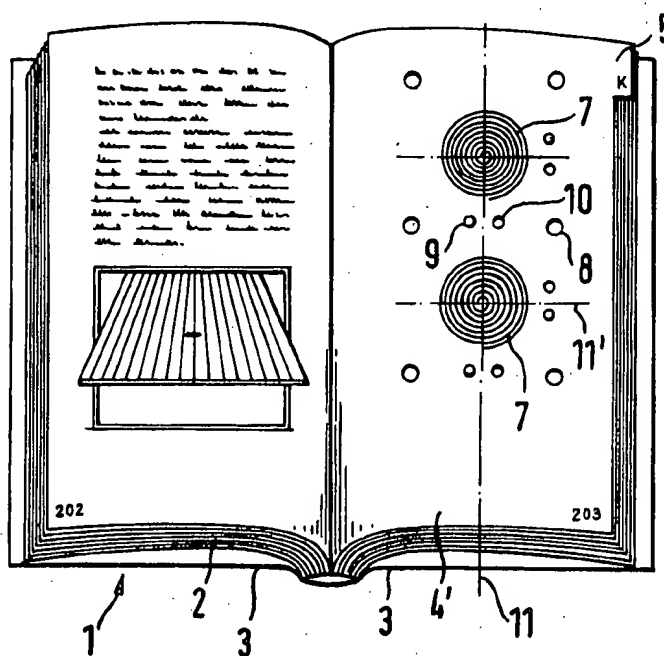
Primary Examiner—William H. Grieb

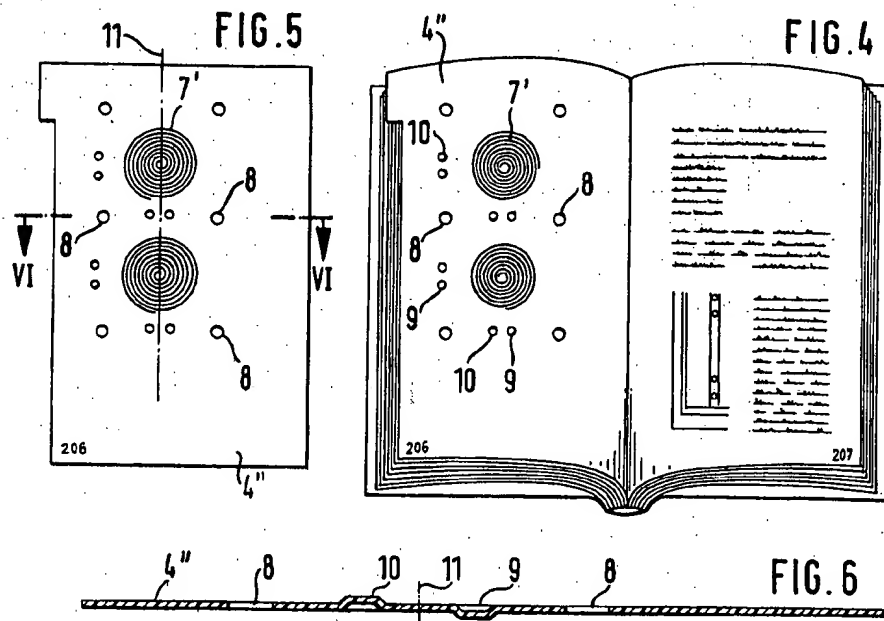
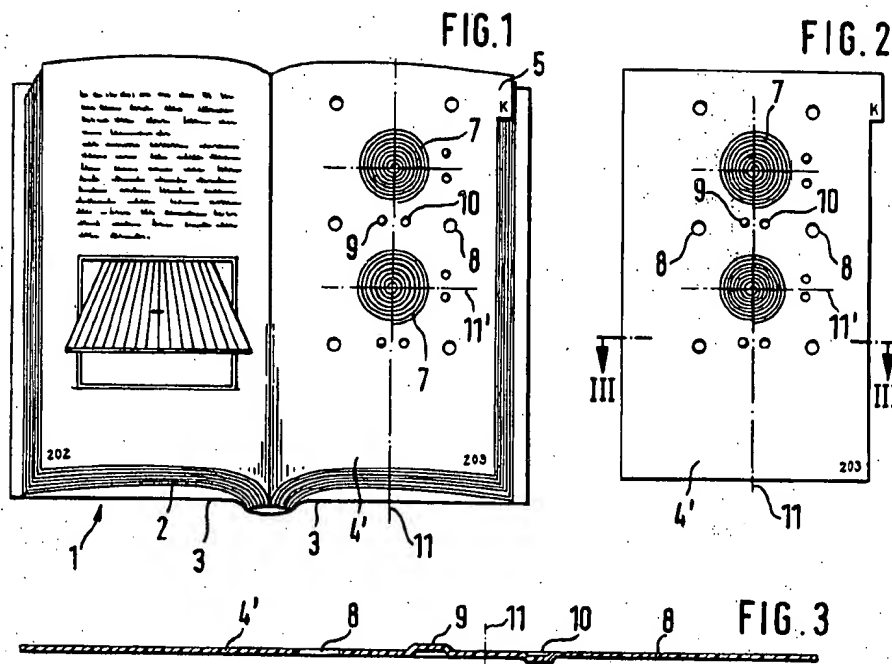
Attorney, Agent, or Firm—Webb, Burden, Robinson &  
Webb

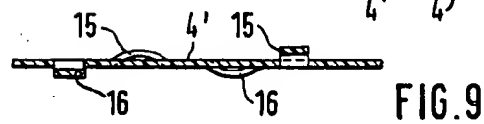
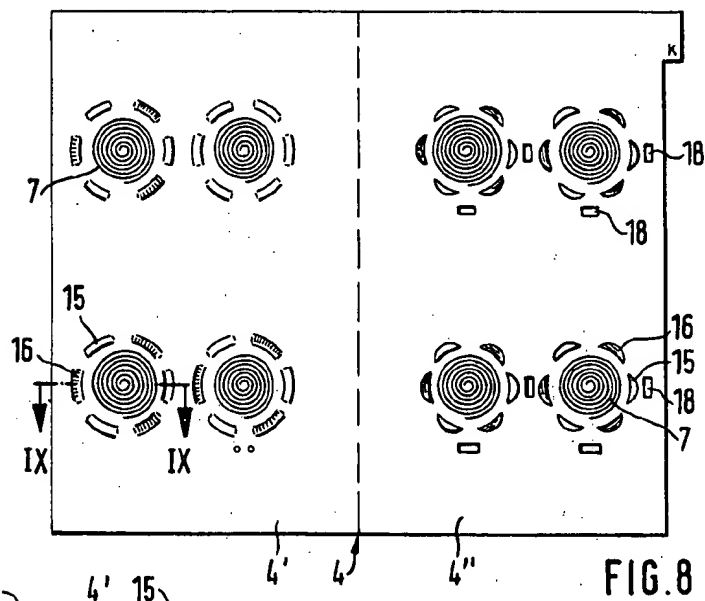
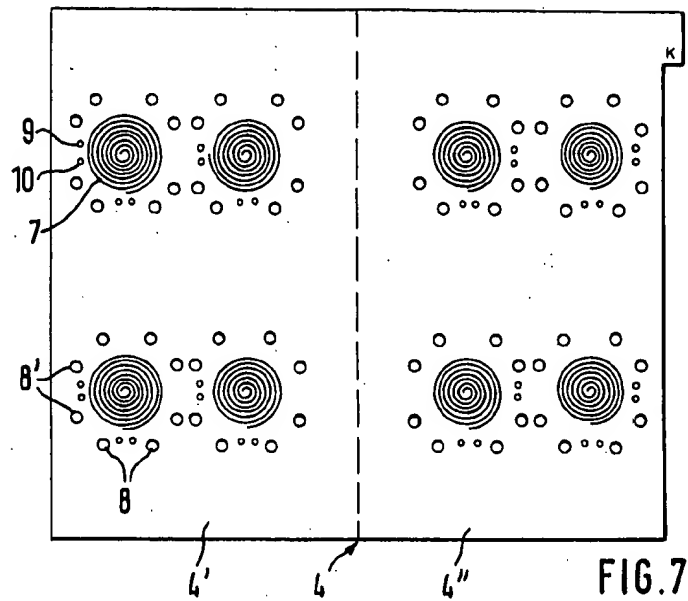
[57] ABSTRACT

A sound-illustrated, bound book includes sound record areas in the form of a spiral sound groove each associated with individual pages. Adjustment perforations or embossments or engravements and switch-on safety elements, if provided, for a sound reproducing apparatus attachable in aligned position, are associated with each sound groove. It is suggested to provide the sound grooves with the adjustment perforations and the switch-on safety elements on separate double pages of plastic material, at best being semi-rigid, and bound in the book, inserted into the quaternia thereof, in order to permit more favorable production of the individual book pages and of the sound groove carriers and to prevent any obstruction when the book is read with a sound reproducing apparatus having a revolving pickup placed on the sound groove and to avoid too much bulging of the book, especially toward one side. The sound grooves may be provided at the front and back sides of the sound record pages so as to be disposed directly opposite each other. The adjustment perforations or engravements and embossments as well as the switch-on safety elements may be arranged symmetrically with respect to two orthogonal central axes of the sound grooves such that they will be in common for the oppositely disposed sound grooves. The switch-on safety elements are embodied by an upwardly protruding embossment and a downwardly protruding engravement located close to the embossment.

18 Claims, 9 Drawing Figures







## SOUND-ILLUSTRATED, BOUND BOOK

The invention relates to a sound-illustrated, bound book, comprising sound record areas in the form of a spiral sound groove each and associated with individual printed pages, and associated with the sound groove adjuster elements, and, possibly, switch-on safety elements for a sound reproducing apparatus attachable in aligned position for interaction with the elements mentioned by adjuster matching elements provided at its underside and, possibly, switch-on safety matching elements.

So-called sounding books or sound-illustrated books for children are known particularly for educational purposes, to teach languages, or as travel guides and the like. On individual pages these books have sound record areas in the form of individual spiral sound grooves which may be provided either by being impressed directly into the pages which are given a corresponding specific surface design, such as being laminated with a plastic film, or by being formed in separate sound recording media (acoustic foils) bonded to the pages. In teaching, especially self-teaching the visual illustrations or written information thus may be supplemented and emphasized by acoustic data of about 1-3 minutes duration contained in the sound groove. Sound grooves impressed in or glued on the text of a page of the book at a suitable location have the disadvantage of causing partial cover-up of the passages of the text to be illustrated, as seen from the part of the reader, by the sound reproducing apparatus attached. Even if no such apparatus is attached, the sound grooves are irritating because they disturb the clarity of the letters and images. This is true also if the sound grooves are located at the respective opposite sides of the two open pages of the book. In both cases it is a disadvantage of impressed sound grooves that the corresponding sound-illustrated page with printed text of the book must be produced separately from the other book pages. Acoustic foil bonded on the pages causes one-sided bulging. Bonding of the sound recording medium by the maker of the book forbids itself for price reasons.

It is known (German Pat. No. 23 58 110) to provide the sound grooves separately on pivotable, semi-rigid book pages so as to avoid the problem of coordination between the sound grooves and the text in the book itself as well as poor readability. This has the disadvantage that, as a rule, a book can be provided only at the left side or at the right side of a book jacket with a foil having impressed sound grooves and corresponding in size to a page of the book. The proportion of sound thus is low as compared to the text contained in the book.

Another known proposal was accepted still less in practice. It provided for a single sound groove on individual, semi-rigid pages of a copy-book so as to cover essentially the entire page. The individual pages are interconnected by a helical spring or the like to form a copy-book (British Pat. No. 800 996).

The sound grooves provided on book pages or book covers are played back by a small attachable sound reproducing apparatus including a circulating pickup head which follows the track of the sound, an amplifier, and a loud speaker as well as the necessary piles or a storage battery for energy supply. Correct coordination between the sound reproducing apparatus and the spiral sound groove can be obtained by surrounding the sound groove with a protruding guide groove or projecting

abutments forming stops and acting as adjuster elements for engagement with the sound reproducing apparatus, the casing of which is provided with a downwardly protruding annular socket to act as an adjuster matching element so as to obtain centering with respect to the sound groove (Japanese Pat. No. 436 403/sho 39-16 159). In another known embodiment of the sound record consisting of an acoustic foil bonded to the book pages and including a spiral sound track, two adjustment perforations are provided at the edge outside of the area taken up by the sound groove to act as adjuster elements for centering. In this case the sound reproducing apparatus includes two feet at its underside to serve as adjuster matching elements for engagement in the perforations upon correct association (German Pat. No. 20 01 283).

When the sound reproducing apparatus has been aligned properly above the sound groove of a book page it is switched on by actuating a switch normally provided at its upper side. Thereupon the pickup of the apparatus is lowered automatically from its retracted position to scan the sound record. When the tracking of the sound groove has been completed, the apparatus may be switched off automatically just like an ordinary record player, and this will return the pickup automatically into its retracted starting position.

It is a disadvantage of such attachable sound reproducing apparatus having a revolving pickup that they may be switched on especially by children long before they have reached their proper position above the sound groove. This may cause the very sensitive pickup stylus to contact surfaces of tables, book pages, edges of sound records, and the like and, thereby, suffer damage. The risk is the same if engagement is established with difficulty only between the adjustment means of the sound record and the matching adjustment means of the sound reproducing apparatus so that the apparatus will be turned on easily even before it has been associated properly with the sound groove.

It is known to eliminate this disadvantage by providing the sound record outside of the sound groove with switch-on safety elements which must be sensed and, perhaps, pivoted by sensor pins of the sound reproducing element acting as switch-on safety matching elements before the circuit can be closed to drive the pickup arm turntable with the pickup arm. The sound reproducing apparatus may comprise conductive sensor pins bridged by an electrically conductive coating in the form of a contact film (German application print 21 55 910) disposed in proper position on the sound record. In this manner the sound reproducing apparatus cannot be switched on or the pickup cannot be moved into its operating position unless the sound reproducing apparatus has been attached in correct alignment.

In another known embodiment of a sound reproducing apparatus including a switch-on safety means (German patent application laid open 24 30 377) the closing contact is located in the reproducing apparatus and it is matched in height with the switching and sensing pin such that it cannot be closed unless the point of the sensing pin is positioned above the plane of attachment of the reproducing apparatus. To this end an upwardly protruding embossment (wart) is formed in the sound record; and the association in height between the closing contact and the sensing pin is such that the contact is closed only when the sensing pin rests on the embossment. It is known that the switch-on safety of this means can be enhanced still further by forming next to the

embossment an aperture, such as a hole and by providing another sensing pin resiliently supported in height in the reproducing apparatus. This sensing pin must extend through the aperture down to the sound recording substrate in order to close the closing contact. If two sensing pins are provided, they must be at different levels so as to permit closing of the operating circuit. The or each sensing pin, in general, will not be able to adopt its desired position unless the sound reproducing apparatus rests in proper alignment on the sound record or on the book page rather than, for instance, being placed directly on a flat book page or table top.

The provision of switch-on safety elements at the sound record has proved to be practically just as necessary for substantially eliminating the risk of damaging the pickup head as the provision of adjustment perforations or other means, such as raised grooves, stampings, and the like to achieve properly aligned coordination.

Considerable technical manufacturing difficulties are encountered and substantial extra expenditure is required to form book pages with sound grooves because not only the manufacture but also the material of the book pages must be suitable for making the sound grooves. Furthermore, the arrangement of the sound grooves must be made in consideration of the arrangement of the text on the pages and of the playback by means of the attachable sound reproducing apparatus. The whole make-up of the book thus becomes difficult. In addition, raised adjusting means cannot be distributed at will across the book page because that would entail one-sided thicker portions of the book. Furthermore, in consideration of the readability of the text, it is impossible to cover the entire book page with sound grooves.

For this reason a sound-illustrated book having bound pages normally was produced such that individual sound records consisting of transparent plastic material and having at their underside a self-adhesive coating covered by a protective film to be peeled off, were made separately from the book and later on glued into the book by the purchaser. Generally the sound record may not be made of opaque plastics because in that event it could be glued only on larger sections without any text.

It is the object of the invention that a sound-illustrated book, having sound grooves, impressed in a separately producible acoustic foil, associated with passages of the text on the individual pages for illustration thereof and adapted to be played back by means of an attachable sound reproducing apparatus, the feet or bottom of which are inserted in corresponding perforations of the acoustic foil or placed between impressed formations, and which preferably cooperates by switch-on safety means, particularly resiliently supported sensing or switching pins located in the switch-on circuit, with raised or depressed formations, should be modified such that more advantageous, and less expensive complete manufacture by the publishers or book manufacturers is permitted and no completion by the purchaser is required, and that the book as a whole becomes thinner, but not at the expense of the sonic quality because of the use of thinner acoustic foils. Tracking of the sound grooves is to be permitted without any coverage or obstruction of view caused by the sound reproducing apparatus.

This object is met, in accordance with the invention, the sound-illustrated, bound or sewed book comprising sound record areas in the form of a spiral sound groove

each and associated with individual printed pages, and associated with the sound groove adjuster elements, and, possibly, switch-on safety elements for a sound reproducing apparatus attachable in aligned position for interaction with the elements mentioned by adjuster matching elements provided at its underside and, possibly, switch-on safety matching elements, in that the sound grooves with the adjuster elements, and switch-on safety elements, if provided, are provided on separate sound record double pages of plastic material bound in the book and inserted into the quaternia thereof (folded printed sheets for, e.g. 8 leaves having 16 pages) and the adjuster elements, and the switch-on safety elements, if provided, are arranged symmetrically with respect to a central axis of the sound grooves.

The complete separation between the production of the book pages and the production of the sound record pages makes it possible to select for each of these manufactures the most favorable conditions, regardless of the other. When binding the book, the semi-rigid double pages of acoustic sheeting including the impressed sound grooves are inserted at the desired locations and bound into the book. The sound record pages may be turned over like any other page of the book. Books not containing sound-illustrations so far may be issued practically for the first time as fully sound-illustrated books when publishing a new edition, by inserting the sound record double pages in the quaternia. The sound record double pages included in the binding have the additional advantage that sound grooves may be provided at both sides of the sound record such that they are directly opposite each other, having the same center, and that the adjuster elements as well as the switch-on safety elements are located in such positions as to be shared by the oppositely disposed sound grooves. Consequently twice the amount of audio information can be furnished as compared to a sound record page having sound grooves on one side only, at the same thickness. Therefore, the book becomes less thick.

Of course, it is also possible to provide sound grooves at one side only if sound-illustration is desired with respect to one book page only. This will be the case in particular with pages bound near the beginning and the end of the book because only that book page can be placed in sufficiently flat position for playback which has the greatest number of book pages underneath. If sound record pages are provided with sound grooves on both sides, it is possible to find the sound-illustration of a book page on the opposite sound record page and vice versa.

Neither the image nor the text of the book pages are disturbed by the attached sound reproducing apparatus or by the sound grooves. Arranging the adjuster elements and the switch-on safety elements symmetrically with respect to orthogonal central axes, preferably at both sides of the sound groove area facilitates perfect attachment of the sound reproducing apparatus. If the sound record double pages are located close to either one of the two book covers and the arching of the pages becomes very pronounced in the one quire, in this manner the sound reproducing apparatus may be attached such that the switch-on safety elements are close to the lateral margin so as to extend approximately parallel to the side edge and thus not be influenced by any arching. As the playback of sound records in books is not altogether unproblematic because of the curvature of the open book, the sound grooves should be as far outside

as possible, away from the back of the book because the arching is greater near the back.

None of the sound grooves impressed disturbs one or the other side. The simpler manufacture is advantageous because all sound grooves for adjacent book pages may be combined on one piece of sheeting or foil so that they may be formed in a single process of impression without disrupting the coordination. The acoustic sheetings for two sound grooves to be arranged opposite each other may be thinner not only because sound grooves are provided at both sides but also because the adjustment perforations as well as the switch-on safety elements are shared by the two superposed sound groove areas. The perforations of the sound groove pages or sound sheetings thus are used from both sides. The same applies to the switch-on safety elements.

It is provided in a modification of the invention that the switch-on safety elements are embodied by an upwardly protruding embossment and a downwardly protruding engraving close to the embossment, and that these are shared by the two sound grooves oppositely disposed on the top and back side of a page of the sound record double page. Every upwardly protruding embossment of the sound sheeting effects a downwardly protruding engraving or setback at the opposite side. Therefore, to obtain a certain switch-on safety means which requires a certain difference in level of the two safety sensing pins of the sound reproducing apparatus, the sound record pages are thinner because the elevations and depressions (upon turning over) can be used in common for both sides (sound grooves).

Impressing sound grooves in both sides of the acoustic foil makes it necessary to position the sound grooves exactly opposite each other on the top and back side of each page of a sound record double page, as is the case with an ordinary record. Then, however, the adjustment perforations and the impressed formations are disposed symmetrically with respect to each other, and this has the consequence that no further thickenings are caused. The switch-on safety elements need not necessarily be of the embodiment indicated. According to a modification of the invention, for instance, the switch-on safety elements on the acoustic foil are embodied by an impressed microprism area, especially one having a narrow reflection profile oriented in a certain direction and adapted to be scanned photoelectrically, particularly by means of a light reflection barrier. Such a microprism area may be imprinted in plastic film material just like the sound grooves. As it does not add to the thickness, this embodiment has no areas at all which project beyond the surface of the sound record page so that there is no one-sided thickening, no matter how the sound grooves and the associated switch-on safety elements are arranged. On the other hand, the fact that several sound grooves each are provided on one sound record page always makes it possible to find a disposition for the switch-on safety elements in the form of impressed formations which will provide a uniform distribution of the sound grooves across the surface area so that one-sided thickenings adding up in a book with many sound record pages have no disturbing effect.

It is convenient also with the sound-illustrated book according to the invention to have an adjustment perforation each associated with each sound groove; especially at either side of the switch-on safety elements, in the area of the two lower corners of a square circumscribing the sound groove. According to a modification

of this embodiment of the adjuster elements, two other adjustment perforations in the area of the two upper corners of the square circumscribing the sound groove are associated with each sound groove. With all adjustment perforations located at the corners of a square, the sound reproducing apparatus may be attached in positions which are orthogonal with respect to each other.

The provision of four perforations for adjustment has the advantage that the sound record page cannot be arched or warped under the sound reproducing apparatus attached in properly aligned position. With only two perforations this could happen because the sound reproducing apparatus must be supported at least at three places of which the third one always would be on the sound record page. If the sound reproducing apparatus should become displaced slightly after attachment so as to effect engagement between the feet thereof and the adjustment perforations, thin sound recording sheetings might suffer stress.

If four adjustment perforations are provided, the sound grooves disposed on top of each other may be more closely approached to each other, with the best possibility of adjustment.

According to another embodiment of the adjuster elements the sound record pages or double pages comprise a ring of alternating adjuster embossments and adjuster engravements concentric with each sound groove. The embossments and engravements may be limited at one or both sides by a cut into the sheeting. With this design of the adjuster elements, again the embossments and engravements are effective at both sides of each sound record page. At the same time, furthermore, they can fulfill the function of the switch-on safety elements in that at least one sensing pin of the sound reproducing apparatus (switch-on safety matching element) must scan one embossment or engraving when the adjuster matching elements of the sound reproducing apparatus fit in form lock on and into the embossments and engravements.

In many cases it will be deemed particularly convenient if the sound record pages of the book are made of a transparent plastic material, in other words if sufficiently rigid transparent acoustic sheetings are used. On the other hand, better sonic quality is obtainable, particularly with thinner sound record pages, if dark plastic material, especially filled with graphite is used. Many conventional records are made of such filled plastic material. The sound record sheeting need no longer be transparent as the illustrative part of the book and the part to be read are to be found on opposite pages each.

According to another modification of the invention the sound record pages project laterally beyond the book pages and are formed like a margin index on which pages could be indicated or an alphabetic information given similar to an index. In this manner the desired sound-illustrations and the corresponding chapters of the book would be easier to find. Since the sound record pages are made of plastic sheeting which, at best, is approximately semi-rigid, their resistance is adequate for longer periods of use.

The invention will be described further, by way of example, with reference to the accompanying drawings, in which:

FIG. 1 shows an open, bound book, having a book page on the left side and a sound record page of a sound record double page on the right side;

FIG. 2 shows the sound record page of FIG. 1;

FIG. 3 is a cross sectional elevation of the sound record page along line 3—3 in FIG. 2;

FIG. 4 shows the book of FIG. 1, yet with the sound record double page turned over;

FIG. 5 shows the sound record page of FIG. 4;

FIG. 6 is a cross sectional elevation of the sound record page along line 6—6 in FIG. 5;

FIG. 7 is a top plan view of a sound record double page having four sound grooves on which a sound reproducing apparatus may be placed properly aligned in two orthogonal positions;

FIG. 8 is a top plan view of a sound record double page having common adjuster elements and switch-on safety elements; and

FIG. 9 is a partial cross sectional elevation of the adjuster elements and switch-on safety elements along line 9—9 in FIG. 8.

FIG. 1 shows a usual bound book 1 opened in the middle. The individual book pages 2 are disposed beneath book covers 3. The normal book page 2 having page number 202 and presenting the text and illustration of a swinging garage door is followed by a sound record double page 4 of transparent, semi-rigid plastic sheeting which can be turned over about as easily as the book pages 2 and is inserted into a quaternion of the book and bound together with the book. Each sound record page 4' and 4'', respectively, projects beyond the book volume by approximately 1 cm, presenting an index lug 5 at the upper part of the right side in FIG. 1. Apart from that the book pages 2 and the sound record pages 4' and 4'', respectively, have the same size.

The sound record pages 4' comprise two impressed spiral sound grooves 7 disposed one above the other symmetrically with respect to a central line 11 of the sound record pages 4' extending parallel to the back of the book and with respect to central lines 11' extending parallel to the upper book edge. Adjustment perforations 8 embodied by holes extending from one side to the other are located at the corners of a square imagined as circumscribing each sound groove 7. The upper adjustment perforations 8 of the lower sound groove 7 at the same time are the lower adjustment perforations of the upper sound groove 7. It is not necessary that the design be such as described above.

Switch-on safety elements embodied by an upwardly protruding embossment and an adjacent, downwardly depressed or setback engraving 10 are disposed between the respective lower adjustment perforations 8 and those close to the margin of the page. These embossments and engravings are scanned by sensing pins of the sound reproducing apparatus which is placed on the book page with its feet to engage in the adjustment perforations 8. The sound reproducing apparatus cannot be switched-on unless the sensing pins bear on the embossment or engraving. Two more switch-on safety embossments and engravings 9 and 10, respectively, are located at both sides of the central lines 11' of the sound grooves 7 which are orthogonal to the central line 11 extending parallel to the back of the book, and each facing the outer margin of the sound record page 4' so that the sound reproducing apparatus may be attached laterally if this provides a better planar position of the pages in the region of the switch-on safety elements, which is the case close to the first and last pages of the book.

The bound book according to FIG. 4 shows the sound record page 4' provided with page number 203 in FIG. 1 and the other sound record page 4'' turned over

to the left so that the backside carrying page number 206 faces the reader. It also carries sound grooves 7' for sound illustration of the right book page which carries page number 207. The sound grooves 7' are positioned exactly opposite the sound grooves 7 of sound record page 203 so that they have a common middle on the central line 11. Outside of the sound groove the adjustment perforations 8 are visible also on page number 206 of the sound record page 4''. Here, however, the switch-on safety elements 9 and 10 of the sound record page number 203 are reversed laterally. At the left there is the downwardly protruding engraving 10 and to the right thereof there is the upwardly protruding embossment 9. These relationships will become apparent from the cross sectional presentations of FIGS. 3 and 6. Upon turning over the sound record pages 4' and 4'', therefore, the sound grooves 7' on the backside thereof can be tracked by means of a sound reproducing apparatus. The safety functions again are fulfilled by the adjustment perforations 8, as far as properly aligned attachment is concerned, and by the switch-on safety elements 9 and 10, as far as switch-on upon proper alignment is concerned. Each embossment of a front page has become an engraving of the back page. As both sides of the acoustic sheeting may be impressed with sound grooves opposite each other as on a record disc, the costs of material and manufacture of the sound record double pages 4 to be bound in the book are reduced quite considerably. The novel design of the book makes it less thick than before in spite of the great number of sound grooves included.

FIGS. 7 and 8 each show an unfolded sound record double page 4 consisting of a left sound record page 4' and a right sound record page 4''. In the embodiment according to FIG. 7 each side comprises four sound grooves 7. It is quite possible to move the sound grooves closer together so that at least six sound grooves can be taken up by each page. The adjustment perforations 8 below and above the sound grooves are separated from the adjustment perforations 8' at both sides of the sound grooves. This means that the adjustment perforations 8 cannot be used when the sound reproducing apparatus is attached laterally; then the lateral perforations 8' are used instead. This design is necessary if the feet of the sound reproducing apparatus serving as adjuster matching elements are closer together. On the other hand, adjustment again is provided by the four feet of the sound reproducing apparatus in order to avoid any warping of the sound record page during the alignment. Switch-on safety embossments 9 and engravings 10 are provided below each sound groove as well as laterally thereof towards the outside.

The embodiment according to FIG. 8 shows each sound groove surrounded by a ring of alternating adjuster embossments 15 and adjuster engravings 16, which ring is concentric with the middle of the sound groove. On the left sound record page 4' the embossments are limited radially inwardly and outwardly with respect to the center by cuts, whereas the embodiment shown of the right sound carrier page 4'' has the embossments and engravings 15 and 16 limited by cuts only at the side facing the center of the sound groove, while they merge directly into the sound carrier page 4'' at the outer side. In this case, the sound reproducing apparatus is provided at its underside with corresponding adjuster matching elements for formlock engagement over and into the embossments and engravings. In at least one of these adjuster matching elements a



sensing pin is provided to scan an embossment 16 or an engraving 15. If such sensing pins are provided in two feet, it is convenient to use one for scanning an embossment 16 and the other one for scanning an engraving 15.

As shown in the right half of FIG. 8, the switch-on safety element may also be embodied by a microprism area which is impressed below the sound groove and laterally thereof, facing the margin of the page, and adapted to be scanned photoelectrically. Microprism areas are known in connection with focussing means of cameras.

What I claim is:

1. A sound-illustrated, bound book, comprising sound record areas in the form of a spiral sound groove each and, associated with individual printed book pages, and adjuster elements associated with the sound groove for a sound reproducing apparatus attachable in aligned position for interaction with said adjuster elements by adjuster matching elements provided at its underside, wherein the sound grooves with the adjuster elements are provided on separate sound record double pages of plastic material bound in the book and inserted into the quaternia thereof and the adjuster elements are arranged symmetrically with respect to a central axis of the sound grooves.
2. A sound-illustrated, bound book, comprising sound record areas in the form of a spiral sound groove each and associated with individual printed book pages, and, associated with the sound groove, adjuster elements and switch-on safety elements for a sound reproducing apparatus attachable in aligned position for interaction with said elements by adjuster matching elements provided at its underside and switch-on safety matching elements, wherein the sound grooves with the adjuster elements and switch-on safety elements are provided on separate sound record double pages of plastic material bound in the book and inserted into the quaternia thereof and the adjuster elements and the switch-on safety elements are arranged symmetrically with respect to a central axis of the sound grooves.
3. The book as claimed in claim 1, wherein the adjuster elements are disposed symmetrically with respect to two orthogonal central axes passing through the center of the sound grooves.
4. The book as claimed in claim 2, wherein the adjuster elements and the switch-on safety elements are disposed symmetrically with respect to two orthogonal central axes passing through the center of the sound grooves.
5. The book as claimed in claim 1 or 3, wherein the sound grooves at both sides of each sound record page are disposed directly opposite each other having the same center, and in that the adjuster elements are arranged to be in common for the oppositely disposed sound grooves.

6. The book as claimed in claim 2 or 4, wherein the sound grooves at both sides of each sound record page are disposed directly opposite each other having the same center, and in that the adjuster elements and the switch-on safety elements are arranged to be in common for the oppositely disposed sound grooves.
7. The book as claimed in claim 2 or 4, wherein the switch-on safety elements are embodied by an upwardly protruding embossment and a downwardly protruding engraving disposed close to said embossment and that they are shared by the two oppositely disposed sound grooves.
8. The book as claimed in claim 2 or 4, wherein the switch-on safety elements are embodied by an impressed microprism area adapted to be scanned photoelectrically.
9. The book as claimed in claim 1 or 2, wherein as adjuster elements an adjustment perforation each is associated with each sound groove in the area of the two adjacent corners of a square circumscribing the sound groove.
10. The book as claimed in claim 9, wherein two further adjustment perforations in the area of the other two corners of the square circumscribing the sound groove are associated with each sound groove.
11. The book as claimed in claim 1 or 2, wherein as adjuster elements the sound record double pages comprise a ring of alternating adjuster embossments and adjuster engravings concentric with each sound groove.
12. The book as claimed in any of claims 1 to 4, wherein the sound record double pages of the book are made of transparent plastic material.
13. The book as claimed in any of claims 1 to 4, wherein the sound record double pages of the book are made of dark plastic material.
14. The book as claimed in claim 13, wherein the sound record double pages of the book are made of dark plastic material filled with graphite.
15. The book as claimed in any of claims 1 to 4, wherein the sound record double pages project laterally beyond the book pages and are formed like a margin index.
16. The book as claimed in any of claims 1 to 4, wherein the sound grooves are provided at one side only of the sound record double page.
17. The book as claimed in claim 6 wherein the switch-on safety elements are embodied by an upwardly protruding engraving disposed close to said embossment and that they are shared by two oppositely disposed sound grooves.
18. The book as claimed in claim 6 wherein the switch-on safety elements are embodied by an impressed microprism area adapted to be scanned photoelectrically.

\* \* \* \* \*



US006335768B1

(12) **United States Patent**  
Reinold et al.

(10) **Patent No.:** US 6,335,768 B1  
(45) **Date of Patent:** \*Jan. 1, 2002

(54) **METHOD AND SYSTEM FOR  
BROADCASTING DIGITAL AUDIO AND  
VIDEO TO AN ANALOG WIRELESS DEVICE**

5,867,223 A \* 2/1999 Schindler et al. .... 348/552  
6,175,628 B1 \* 1/2001 Reinold et al. .... 380/42  
6,185,305 B1 \* 2/2001 Reinbold et al. .... 380/42

(75) **Inventors:** Jurgen Reinold, Phoenix; David Knappenberger, Tempe; Mathew Cucuzella, Phoenix; Jack Scott Geranen, Phoenix; Jeff Lee, Phoenix; Michael E. Williams, Chandler, all of AZ (US)

#### FOREIGN PATENT DOCUMENTS

DE 298 02 454 \* 5/1998 ..... H04N/7/10  
JP 404010877 \* 1/1992 ..... H04N/5/60  
JP 409224198 \* 8/1997 ..... H04N/5/38

#### OTHER PUBLICATIONS

(73) **Assignee:** Motorola Inc., Schaumburg, IL (US)

"Pirate TV Station" received by the PTO in Feb. of 1991.\*

(\*) **Notice:** Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

\* cited by examiner

This patent is subject to a terminal disclaimer.

*Primary Examiner*—David E. Harvey  
(74) *Attorney, Agent, or Firm*—S. Kevin Pickens; Kevin D. Wills

#### (57) ABSTRACT

An audio input interface (122) receives a digital audio signal and identifies an audio bitstream which is optionally decrypted by a decryption unit (123), and decoded by an audio decoding unit (124). An audio digital to analog converter (126) converts the decoded audio bitstream to an analog audio signal which is optionally decrypted by an audio analog decryption unit (127). A video input interface (142) receives a digital video signal and identifies a video bitstream which is optionally decrypted by a video digital decryption unit (143), and decoded by a video decoding unit (144). A video digital to analog converter (146) converts the decoded video bitstream to an analog video signal that is optionally decrypted by a video analog decryption unit (147). An analog transmitter (150) mixes the analog audio signal and analog video signal and transmits an analog wireless output signal to an analog wireless device (110).

(21) **Appl. No.:** 09/071,045

(22) **Filed:** May 4, 1998

(51) **Int. Cl.**<sup>7</sup> ..... H04N 5/38

(52) **U.S. Cl.** ..... 348/723; 380/42

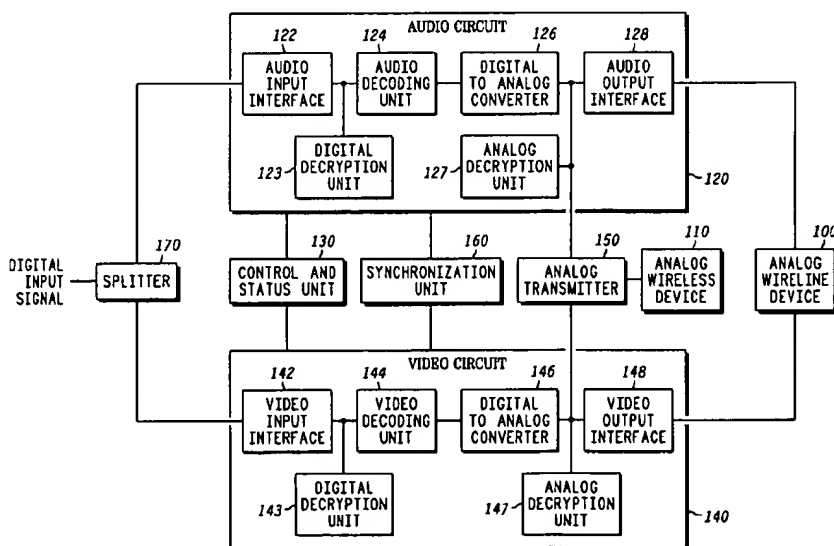
(58) **Field of Search** ..... ; 348/723, 724, 348/725; 725/153, 151, 68, 70; 380/42, 205; H04N 5/38, 5/44, 7/10, 7/22, 7/20, 7/167, 7/16, 7/13

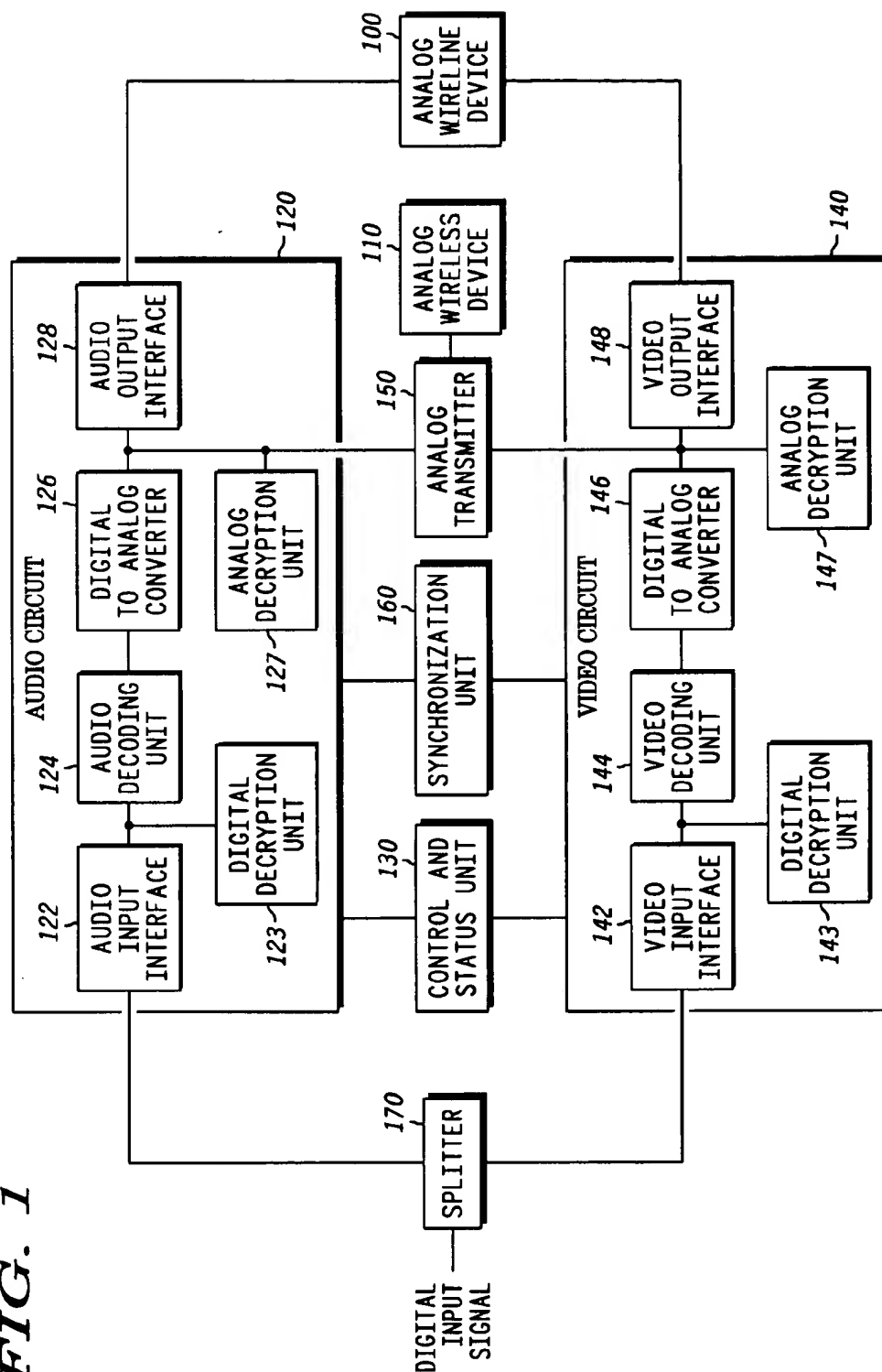
#### (56) References Cited

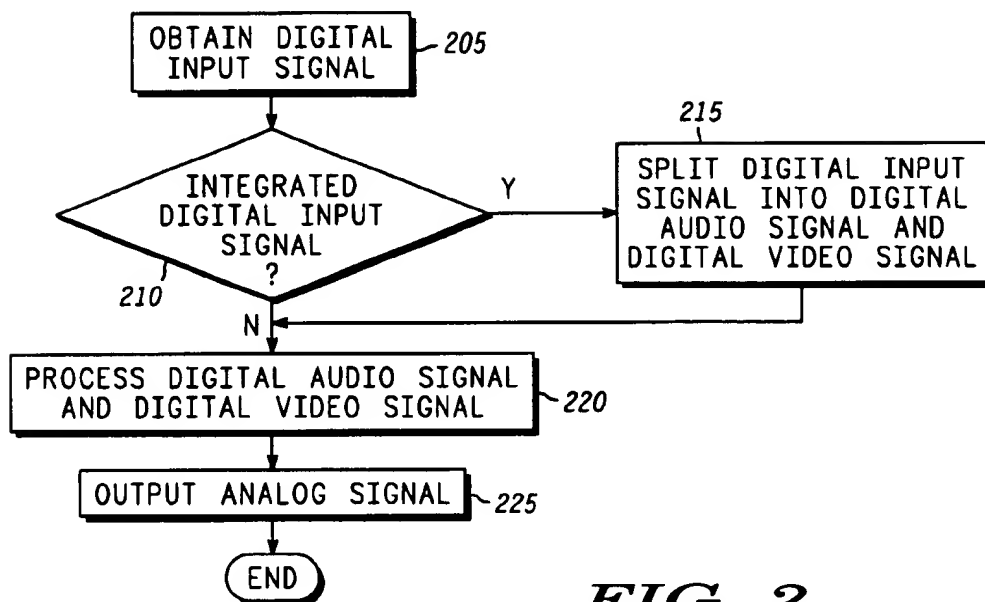
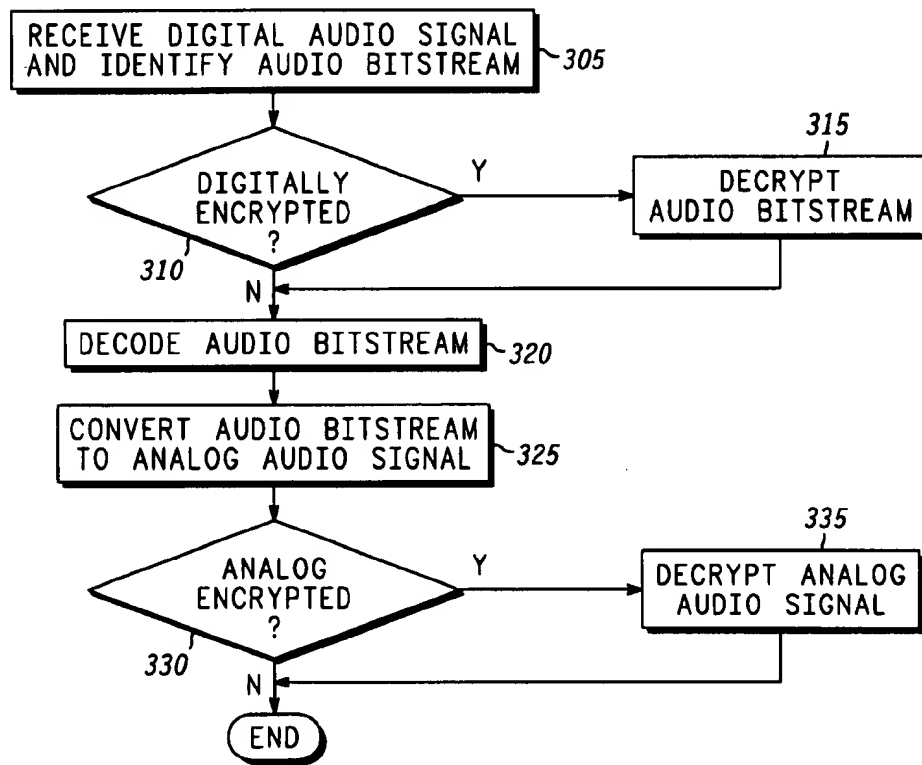
##### U.S. PATENT DOCUMENTS

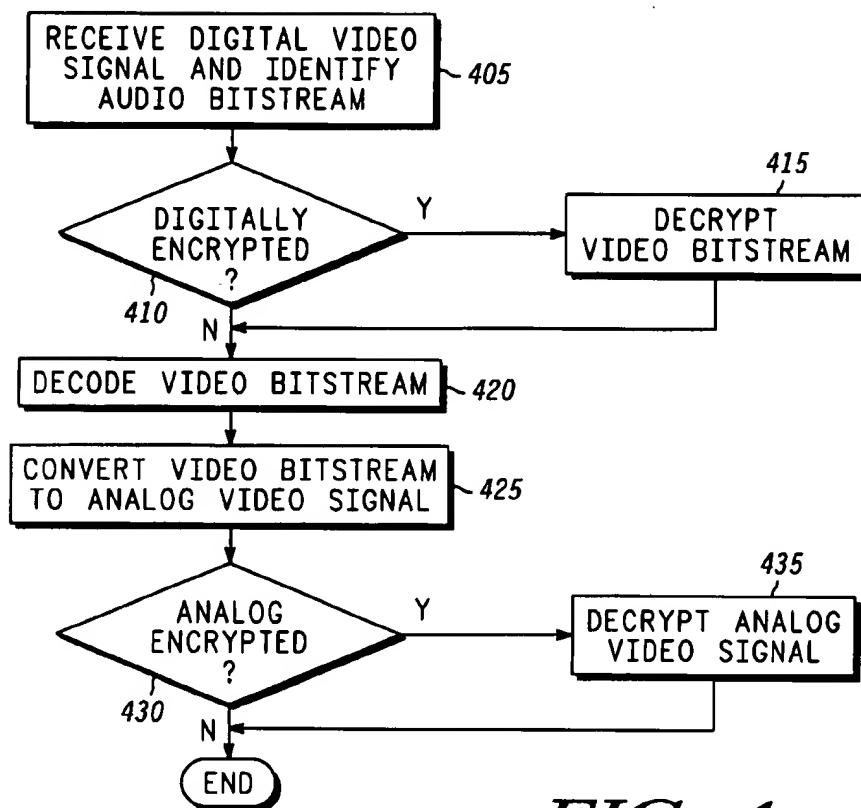
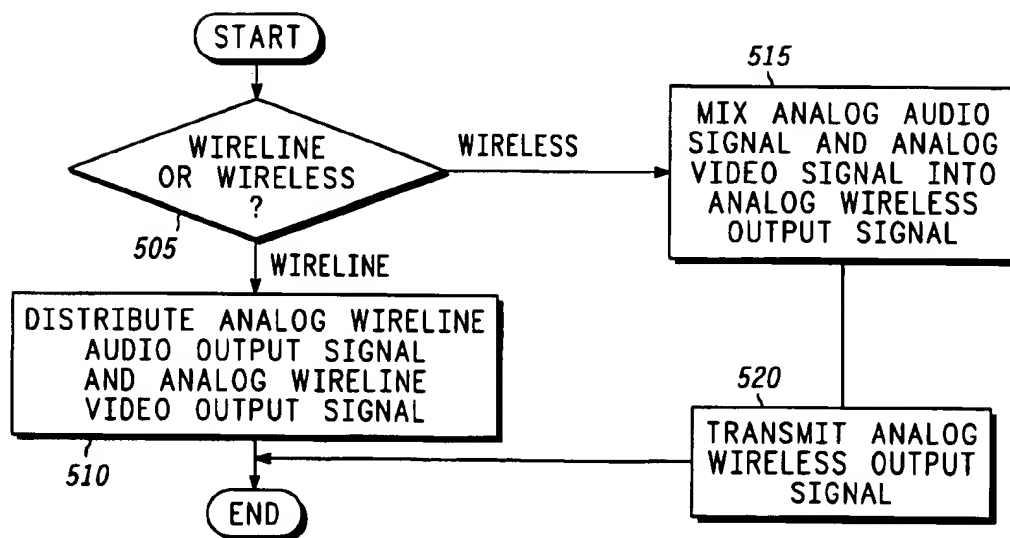
4,916,532 A \* 4/1990 Streck et al. .... 348/723  
5,198,903 A \* 3/1993 Tinaphong ..... 348/724  
5,729,549 A 3/1998 Kostreski et al.  
5,784,572 A 7/1998 Rostoker et al.  
5,826,166 A \* 10/1998 Brooks et al. .... 455/5.1

30 Claims, 3 Drawing Sheets



**FIG. 1**

*FIG. 2**FIG. 3*

*FIG. 4**FIG. 5*

1

## METHOD AND SYSTEM FOR BROADCASTING DIGITAL AUDIO AND VIDEO TO AN ANALOG WIRELESS DEVICE

### RELATED INVENTIONS

The present invention is related to the following inventions which are assigned to the same assignee as the present invention:

Method and System for Distributing Digital Audio and Video to an Analog Wireline Device, filed May 4, 1998, having Ser. No. 09/071,046.

Method and System for Broadcasting/Distributing Digital Audio and Video to a Television, filed May 4 1998, having Ser. No. 09/071,368.

Method and System for Broadcasting Digital Audio to Radio, filed May 4, 1998, having Ser. No. 09/071,047.

### FIELD OF THE INVENTION

The present invention relates generally to digital audio and video.

### BACKGROUND OF THE INVENTION

A wide variety of digital audio and video content currently exists. For example, computers can process or store audio and video data obtained via the internet and other sources. Consumption of digital audio and video is currently confined, however, to devices designed to accept a specific form of input. For example, a computer can play digital audio and video provided in a specific digital format which the computer is configured to process, but a current television cannot play the same digital audio and video data because it is designed to receive an entirely different form of input. Accordingly, it would be desirable to have the capability of playing digital audio and video with devices designed to receive a different form of input.

### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a circuit diagram of a system for broadcasting audio and video to an analog device;

FIG. 2 is a flowchart of the process performed by the system shown in FIG. 1;

FIG. 3 is a flowchart of the process for processing a digital audio signal;

FIG. 4 is a flowchart of the process for processing a digital video signal; and

FIG. 5 is a flowchart of the process for outputting the digital audio and video to the analog device.

### DETAILED DESCRIPTION OF THE DRAWINGS

In a preferred embodiment of the invention, a method and system is provided for broadcasting digital audio and/or video to an analog wireless device. More specifically, the preferred embodiment of the invention obtains digital audio and/or video signals and broadcasts the audio and/or video content of the digital signals to the analog wireless device. As a result, an analog wireless device which is not designed to receive digital audio or video can play the audio and/or video content.

In one aspect of the preferred embodiment, an audio circuit broadcasts an analog audio signal to the analog wireless device. An audio input interface receives a digital audio signal and identifies an audio bitstream. Optionally, an audio digital decryption unit decrypts the audio bitstream.

2

An audio decoding unit then decodes the audio bitstream. The audio decoding unit optionally includes a decompression component decompressing the audio bitstream. An audio digital to analog converter converts the decoded audio bitstream to an analog audio signal. Optionally, an audio analog decryption unit decrypts the analog audio signal. An analog transmitter transmits the analog audio signal to the analog wireless device.

In another aspect of the preferred embodiment, a video circuit broadcasts an analog video signal to the analog wireless device. A video input interface receives a digital video signal and identifies a video bitstream. Optionally, a video digital decryption unit decrypts the video bitstream. A video decoding unit then decodes the video bitstream. The video decoding unit optionally includes a decompression component decompressing the video bitstream. A video digital to analog converter converts the decoded video bitstream to an analog video signal. Optionally, a video analog decryption unit decrypts the analog video signal. An analog transmitter transmits the analog video signal to the analog wireless device.

In yet another aspect of the preferred embodiment, the audio circuit and video circuit are combined to broadcast an analog wireless output signal containing both audio and video content. An audio input interface receives a digital audio signal and identifies an audio bitstream. Optionally, an audio digital decryption unit decrypts the audio bitstream. An audio decoding unit then decodes the audio bitstream. The audio decoding unit optionally includes a decompression component decompressing the audio bitstream. An audio digital to analog converter converts the decoded audio bitstream to an analog audio signal. Optionally, an audio analog decryption unit decrypts the analog audio signal. A video input interface receives a digital video signal and identifies a video bitstream. Optionally, a video digital decryption unit decrypts the video bitstream. A video decoding unit then decodes the video bitstream. The video decoding unit optionally includes a decompression component decompressing the video bitstream. A video digital to analog converter converts the decoded video bitstream to an analog video signal. Optionally, a video analog decryption unit decrypts the analog video signal. An analog transmitter then mixes the analog audio signal and analog video signal into an analog wireless output signal and transmits the analog wireless output signal to the analog wireless device.

FIG. 1 is a circuit diagram of a system for broadcasting both audio and video to an analog device. In FIG. 1, an audio circuit 120 obtains a digital audio signal and produces an analog audio signal which can be distributed to an analog wireline device 100 or broadcast to an analog wireless device 110. The analog wireline device 100 is, for example, any one or more of a number of devices including, but not limited to, a cassette recorder, television, video cassette recorder, amplifier, or amplified speakers. The analog wireless device 110 is, for example, any one or more of a number of devices including, but not limited to, a radio, television, cordless telephone or wireless speakers.

The audio circuit 120 contains an audio input interface 122, an optional audio digital decryption unit 123, an audio decoding unit 124, an audio digital to analog converter 126, an optional audio analog decryption unit 127 and an audio output interface 128. One of ordinary skill in the art will implement these components using circuitry best suited to the application at hand. For example, each of the components may be implemented with one or more chips or with software executed by a processor contained therein or in another component of the system shown in FIG. 1, such as

3

a control unit 130, which will be described in more detail below. The functions of these components will be explained in greater detail with references to the flowcharts below.

Similarly, a video circuit 140 obtains a digital video signal and produces an analog video signal which can be distributed to the analog wireline device 100 or broadcast to the analog wireless device 110. The video circuit contains a video input interface 142, an optional video digital decryption unit 143, a video decoding unit 144, a video digital to analog converter 146, an optional video analog decryption unit 147 and a video output interface 148. One of ordinary skill in the art will implement these components using circuitry best suited to the application at hand. For example, each of the components may be implemented with one or more chips or with software executed by a processor contained therein, or in another component of the system shown in FIG. 1, such as the control unit 130. The functions of these components will be explained in greater detail with reference to the flowcharts below.

An analog transmitter 150 mixes the analog audio signal and analog video signal into an analog wireless output signal and transmits the analog wireless output signal to the analog wireless device 110. For example, where the analog wireless device 110 is a radio, the analog transmitter 150 transmits an analog audio signal in the FM or AM band. When both audio and video content are present, a synchronization unit 160 synchronizes processing by the audio circuit 120 and the video circuit 140 to synchronize the output to the analog wireless device 110. If the audio and video are provided as an integrated digital input signal, a splitter 170 separates the digital input signal into the digital audio signal received by the audio circuit 120 and the digital video signal received by the video circuit 140.

The control unit 130 obtains input from a user and controls the audio circuit 120 to play audio and the video circuit 140 to play video in accordance with the user input. The control unit 130 obtains input from a user and controls the audio circuit 120 to process the digital audio signal and the video circuit 140 to process the digital video signal in accordance with the user input. One of ordinary skill in the art will readily implement the control unit 130 in any of a number of different ways, depending on the environment and end device to which the system is applied. For example, where the analog wireless device 110 is a radio, the control unit 130 can be implemented as a control panel or remote control device which obtains a frequency selection from a user and controls the analog transmitter to transmit the analog audio signal at the radio frequency selected by the user. The control unit could also obtain a selection of the AM or FM band by the user. As another example, where the analog wireless device 110 is a television, the control unit 130 can be implemented as a control panel or remote control device which obtains a channel or television frequency selection from a user and controls the analog transmitter to transmit the analog wireless output signal at the television frequency or channel selected by the user. The control unit 130 can also provide for selection from a number of different possible input sources and formats, and for selection from among one or more end devices.

FIG. 2 is a flowchart of the process performed by the system shown in FIG. 1. In step 205, the system obtains a digital input signal. The digital input signal may be an integrated audio/video signal or a separate digital audio signal and digital video signal. If the digital input signal is determined in step 210 to be an integrated audio/video signal, the splitter 170 splits the signal in step 215 into a digital audio signal and a digital video signal. The digital

4

audio signal and digital video signal are then processed in step 220 by the audio circuit 120 and the video circuit 140, respectively.

FIG. 3 is a flowchart of the process performed by the audio circuit 120 to process the digital audio signal in accordance with step 220. In step 305, the audio input interface 122 receives the digital audio signal and identifies an audio bitstream within the digital audio signal. The digital audio signal contains audio data from any of a number of possible sources. For example, the audio input interface 122 can receive the digital audio signal from a network such as via the internet or an intranet. As another example, the audio input interface 122 can receive the digital audio signal from a local storage device, such as a CD-ROM, DVD or hard disk. As yet another example, the digital audio signal can be produced by a computer application such as a text-to-speech application or a digital musical instrument.

One of ordinary skill in the art will readily implement the audio input interface 122 to receive a digital audio signal in any of a number of possible formats from any of a number of possible sources. The audio input interface 122 can be implemented, for example, using physical layer interface types such as USB, IEEE 1394-1995 and IEEE 802.x, and using protocols such as HTTP, TCP/IP, and UDP/IP. Depending on the source and format of the digital audio signal, the audio input interface 122 performs other functions in addition to identifying the audio bitstream. Such functions include, but are not necessarily limited to, physical layer functions such as error correction, etc., transport layer functions such as device addressing, etc., session layer functions such as content provider selection, and so forth.

If the audio bitstream is determined in step 310 to have been digitally encrypted, the audio digital decryption unit 123 digitally decrypts the audio bitstream in step 315. Possible applications of the invention described herein may require the digital audio signal to be digitally encrypted so that only authorized devices can use the audio content therein, such as premium channels, classified information, copy protection, and pay-per-listen content. The control unit 130 controls the audio digital decryption unit 123 to decrypt only authorized digital audio. One of ordinary skill in the art will readily implement the audio digital decryption unit 123 utilizing available hardware, software, and so forth.

In step 320, the audio decoding unit 124 decodes the audio bitstream. One of ordinary skill in the art will implement the audio decoding unit 124 based on the environment and application at hand, utilizing available hardware, software, etc. to decode the data based on any of a number of possible encoding methods with which the audio bitstream has been encoded. Such encoding methods include, but are not limited to, ADPCM, CD-DA, ITU G.711, G.722, G.723 & G.728, MPEG I, II & III, AC-3, AIFF, AIFC, AU, Pure Voice, Real Audio and WAV. Depending on the encoding method, data compression may also be included, in which case step 320 includes the step of decompressing the audio bitstream and the audio decoding unit 124 includes a decompression component.

In step 325, the audio digital to analog converter 126 converts the audio bitstream to an analog audio signal. One of ordinary skill in the art will readily implement the audio digital to analog converter 126 utilizing an available digital to analog converter. If the analog audio signal is determined in step 330 to have been analog encrypted, then the audio analog decryption unit 127 decrypts the analog audio signal in step 335. Possible applications of the invention described herein require the analog audio signal to be analog encrypted

5

so that only authorized devices can use the analog audio or because the audio content is copy protected. The control unit 130 controls the audio analog decryption unit 127 to decrypt only authorized digital audio.

FIG. 4 is a flowchart of the process performed by the video circuit 140 to process the digital video signal in accordance with step 220. The process is essentially the same as that performed by the audio circuit 120 to process the digital audio signal. In step 405, the video input interface 142 receives the digital video signal and identifies a video bitstream within the digital video signal. The digital video signal contains video data from any of a number of possible sources. For example, the video input interface 142 can receive the digital video signal from a network such as via the internet or an intranet. As another example, the video input interface 142 can receive the digital video signal from a local storage device, such as a CD-ROM, DVD or hard disk. As yet another example, the digital video signal can be produced by a digital video camera.

One of ordinary skill in the art will readily implement the video input interface 142 to receive a digital video signal in any of a number of possible formats from any of a number of possible sources. The video input interface 142 can be implemented, for example, using physical layer interface types such as USB, IEEE 1394-1995 and IEEE 802.x, and using protocols such as HTTP, TCP/IP, and UDP/IP. Depending on the source and format of the digital video signal, the video input interface 142 performs other functions in addition to identifying the video bitstream. Such functions include, but are not necessarily limited to, physical layer functions such as error correction, etc., transport layer functions such as device addressing, etc., session layer functions such as content provider selection, and so forth.

If the video bitstream is determined in step 410 to have been digitally encrypted, the video digital decryption unit 143 digitally decrypts the video bitstream in step 415. Possible applications of the invention described herein may require the digital video signal to be digitally encrypted so that only authorized devices can use the video content therein, such as premium channels, classified information, copy protection, and pay-per-view content. The control unit 130 controls the video digital decryption unit 143 to decrypt only authorized digital video. One of ordinary skill in the art will readily implement the video digital decryption unit 143 utilizing available hardware, software, and so forth.

In step 420, the video decoding unit 144 decodes the video bitstream. One of ordinary skill in the art will implement the video decoding unit 144 based on the environment and application at hand, utilizing available hardware, software, etc. to decode the data based on any of a number of possible encoding methods with which the video bitstream has been encoded. Such encoding methods include, but are not limited to, ITU H.261 & H.263, Motion JPEG, MPEG-1, MPEG-2 and MPEG-4, Cinepak, ClearVideo, Sony DV, Indeo, Real Video, Sorensen and VDOLive. Depending on the encoding method, data compression may also be included, in which case step 420 includes the step of decompressing the video bitstream and the video decoding unit 144 includes a decompression component.

In step 425, the video digital to analog converter 146 converts the video bitstream to an analog video signal. One of ordinary skill in the art will readily implement the video digital to analog converter 146 utilizing an available digital to analog converter. If the analog video signal is determined in step 430 to have been analog encrypted, then the video analog decryption unit 147 decrypts the analog video signal

6

in step 435. Possible applications of the invention described herein may require the analog video signal to be analog encrypted so that only authorized devices can use the analog video or because the video content is copy protected. The control unit 130 controls the video analog decryption unit 147 to decrypt only authorized digital video.

Returning now to FIG. 2, upon processing the digital audio signal and digital video signal in step 220, the system outputs in step 225 the appropriate analog signal to the end device. FIG. 5 is a flowchart of this output process. The system determines in step 505 whether the end device is an analog wireline device 100 or an analog wireless device 110. If the end device is an analog wireline device 100, then the audio output interface 128 distributes in step 510 the analog audio signal and the video output interface 148 distributes the analog video signal to the analog wireline device 100 via wireline. One of ordinary skill in the art will readily implement the audio output interface 128 and video output interface 148 utilizing available hardware, software, etc. to provide the appropriately formatted wireline signals, depending on the input format expected by the analog wireline device 100. For example, the audio output interface 128 can distribute the analog audio signal to a cassette recorder, amplifier or amplified speakers using a standard line out connection. Similarly, the video output interface 148 can distribute the analog video signal to a television or video cassette recorder using a standard Composite Video or S-Video connection. One of ordinary skill in the art will also readily extend the implementation to distribute the analog audio signal and/or analog video signal to multiple devices, as desired for the application at hand.

If the end device is an analog wireless device 110, then the analog transmitter 150 mixes in step 515 the analog audio signal and the analog video signal to produce an analog wireless output signal and transmits in step 520 the analog wireless output signal to the analog wireless device 110. One of ordinary skill in the art will readily implement the analog transmitter to provide the appropriately formatted wireless signals, depending on the input format expected by the analog wireless device 110. For example, the analog transmitter 150 can transmit to a radio in a radio frequency in the AM or FM band, to a television in a television frequency or channel, or to wireless speakers and headphones in the 900 Mhz frequency band. Alternatively, where the end device is a wireline device that receives a transmitted signal, such as a cable television, the analog transmitter 150 transmits an analog output signal to a wireline device instead of distributing the analog audio signal and the analog video signal in step 510. One of ordinary skill in the art will also readily extend the implementation to transmit the analog audio signal, analog video signal or analog wireless output signal to multiple devices, as desired for the application at hand.

It should be appreciated that the invention described herein provides the capability of playing digital audio and/or video with a device designed to receive a different form of input. The present invention has been described above with reference to preferred embodiments. However, those skilled in the art will recognize that changes and modifications may be made in these preferred embodiments without departing from the scope of the present invention. For example, one of ordinary skill in the art will recognize circumstances where the components of the audio circuit 120 and the video circuit 140 may be differently arranged such that the functions performed thereby will be performed in a different order, as desired. Changes and modifications which are obvious to those skilled in the art are intended to be included within the scope of the present invention.



What is claimed is:

1. A system for broadcasting audio content of a digital audio signal to an analog wireless device, comprising:

an audio input interface receiving the digital audio signal and identifying an audio bitstream, wherein the audio bitstream comprises audio data based on a plurality of encoding methods;

an audio decoding unit connected to the audio input interface and decoding the audio bitstream;

an audio digital to analog converter connected to the audio decoding unit and converting the audio bitstream to an analog audio signal; and

an analog transmitter connected to the audio digital to analog converter and transmitting the analog audio signal to the analog wireless device.

2. The system of claim 1, further comprising an audio digital decryption unit connected to the audio input interface and decrypting the audio bitstream.

3. The system of claim 1, further comprising an audio analog decryption unit connected to the audio digital to analog converter and decrypting the analog audio signal.

4. The system of claim 1 wherein the analog transmitter transmits the analog audio signal to multiple devices.

5. The system of claim 1 wherein the audio input interface receives the digital audio signal from a network.

6. The system of claim 1 wherein the audio input interface receives the digital audio signal from a local storage device.

7. The system of claim 1 wherein the audio input interface receives the digital audio signal produced by a text-to-speech application.

8. The system of claim 1 wherein the audio input interface receives the digital audio signal produced by a digital musical instrument.

9. A system for broadcasting video content of a digital video signal to an analog wireless device, comprising:

a video input interface receiving the digital video signal and identifying a video bitstream, wherein the video bitstream comprises video data based on a plurality of encoding methods;

a video decoding unit connected to the video input interface and decoding the video bitstream;

a video digital to analog converter connected to the video decoding unit and converting the video bitstream to an analog video signal; and

an analog transmitter connected to the video digital to analog converter and transmitting the analog video signal to the analog wireless device.

10. The system of claim 9, further comprising a video digital decryption unit connected to the video input interface and decrypting the video bitstream.

11. The system of claim 9, further comprising a video analog decryption unit connected to the video digital to analog converter and decrypting the analog video signal.

12. The system of claim 9 wherein the analog transmitter transmits the analog video signal to multiple devices.

13. The system of claim 9 wherein the video input interface receives the digital video signal from a network.

14. The system of claim 9 wherein the video input interface receives the digital video signal from a local storage device.

15. The system of claim 9 wherein the video input interface receives the digital video signal produced by a digital video camera.

16. A system for broadcasting audio and video content of a digital audio signal and a digital video signal to an analog wireless device, comprising:

an audio input interface receiving the digital audio signal and identifying an audio bitstream, wherein the audio bitstream comprises audio data based on a plurality of encoding methods;

an audio decoding unit connected to the audio input interface and decoding the audio bitstream;

an audio digital to analog converter connected to the audio decoding unit and converting the audio bitstream to an analog audio signal;

a video input interface receiving the digital video signal and identifying a video bitstream, wherein the video bitstream comprises video data based on a plurality of encoding methods;

a video decoding unit connected to the video input interface and decoding the video bitstream;

a video digital to analog converter connected to the video decoding unit and converting the video bitstream to an analog video signal; and

an analog transmitter connected to the audio digital to analog converter and connected to the video digital to analog converter, mixing the analog audio signal and the analog video signal to produce an analog wireless output signal, and transmitting the analog wireless output signal to the analog wireless device.

17. The system of claim 16, further comprising a splitter receiving a digital input signal and splitting the digital input signal into the digital audio signal and the digital video signal.

18. The system of claim 16 wherein the video input interface receives the digital video signal from a network.

19. The system of claim 16 wherein the video input interface receives the digital video signal from a local storage device.

20. The system of claim 16 wherein the video input interface receives the digital video signal produced by a digital video camera.

21. A method for broadcasting audio content of a digital audio signal to an analog wireless device, comprising the steps of:

receiving the digital audio signal and identifying an audio bitstream, wherein the audio bitstream comprises audio data based on a plurality of encoding methods;

decoding the audio bitstream;

converting the audio bitstream to an analog audio signal; and

transmitting the analog audio signal to the analog wireless device.

22. The of claim 21, further comprising the step of decrypting the audio bitstream.

23. The method of claim 21, further comprising the step of decrypting the analog audio signal.

24. The method of claim 21 wherein the step of decoding the audio bitstream includes decompressing the audio bitstream.

25. A method for broadcasting video content of a digital video signal to an analog wireless device, comprising the steps of:

receiving the digital video signal and identifying a video bitstream, wherein the video bitstream comprises video data based on a plurality of encoding methods;

decoding the video bitstream;

converting the video bitstream to an analog video signal; and

9

transmitting the analog video signal to the analog wireless device.

26. The method of claim 25, further comprising the step of decrypting the video bitstream.

27. The method of claim 25, further comprising the step 5 of decrypting the analog video signal.

28. The method of claim 25 wherein the step of decoding the video bitstream includes decompressing the video bitstream.

29. A method for broadcasting audio and video content of 10 a digital audio signal and a digital video signal to an analog wireless device, comprising the steps of:

receiving the digital audio signal and identifying an audio bitstream, wherein the audio bitstream comprises audio data based on a plurality of encoding methods; 15

decoding the audio bitstream;

converting the audio bitstream to an analog audio signal;

10

receiving the digital video signal and identifying a video bitstream, wherein the video bitstream comprises video data based on a plurality of encoding methods;

decoding the video bitstream;

converting the video bitstream to an analog video signal; mixing the analog audio signal and the analog video signal to produce an analog wireless output signal; and transmitting the analog wireless output signal to the analog wireless device.

30. The method of claim 29, further comprising the steps of:

receiving a digital input signal as an integrated digital input signal; and

splitting the digital input signal into the digital audio signal and the digital video signal.

\* \* \* \* \*

[54] AUDIO VISUAL INFORMATION SYSTEM

[75] Inventors: James A. H. Mitchell, London;  
Edward J. Day, Kingston Surry, both  
of England

[73] Assignee: Mitchell Beazley Encyclopedias, Ltd.,  
London, England

[21] Appl. No.: 69,830

[22] Filed: Aug. 27, 1979

Related U.S. Patent Documents

Reissue of:

[64] Patent No.: 4,124,943  
Issued: Nov. 14, 1978  
Appl. No.: 616,551  
Filed: Sep. 25, 1975

[51] Int. Cl.<sup>3</sup> ..... G09B 5/06  
[52] U.S. Cl. .... 434/307  
[58] Field of Search ..... 35/8 A, 9 R, 35 C, 35 E;  
274/42 P; 40/340; 283/36-43; 434/308, 309,  
310, 307

[56] References Cited

U.S. PATENT DOCUMENTS

1,236,333	8/1917	Mayhew	35/8 A UX
1,295,763	2/1919	Kohn	35/8 A UX
3,110,508	11/1963	Sendor	283/42 X
3,242,596	3/1966	Smith	35/9 R X
3,404,224	10/1968	Revelo et al.	35/8 A UX
4,109,938	8/1978	Mitchell et al.	283/43
4,124,943	11/1978	Mitchell et al.	35/8 A

FOREIGN PATENT DOCUMENTS

108083	12/1924	Switzerland	283/36
1039988	8/1966	United Kingdom	283/36

OTHER PUBLICATIONS

Encyclopedia Britannica; 15th Edition, ©1974 vol. 2, p. 1056.

Primary Examiner—William H. Grieb  
Attorney, Agent, or Firm—Stephen E. Feldman; Marvin Feldman

[57] ABSTRACT

A printed illustrated text, printed alphabetical text and printed illustrated index are all correlated to a set of recordings intended for audio visual display and which are in turn topically arranged. In addition the illustrated index may by themselves be recorded in their entireties for audio visual display. The illustrated text is presented by a main written portion heavily pictorialized by a key illustration and ancillary illustrations arranged in a pre-determined sequence with ancillary supporting information. A conspicuously displaying cross-reference listing refers to other pertinent illustrated texts and topical audio visual recordings. The alphabetical text is correlated to pertinent portions of the illustrated text by having, on pertinent pages thereof, key illustrations from the illustrated text. It, in addition, carries cross-references to pertinent optical audio visual recordings as well as to other pertinent information in the system. The illustrated index, which may include reduced reproductions of entire pages from the illustrated text, is also cross-referenced to pertinent topical audio visual recordings. The jackets for each topical audio visual recording include a printed display of pertinent portions of the illustrated text and pertinent portions from the alphabetical text. In addition sub-topic titles, and/or illustrations indicative of such sub-topics, are arranged in positions corresponding to the position of the recorded sub-topic information; and are printed either directly upon the audio visual recording or a transparent sleeve carried by the jacket.

26 Claims, 9 Drawing Figures

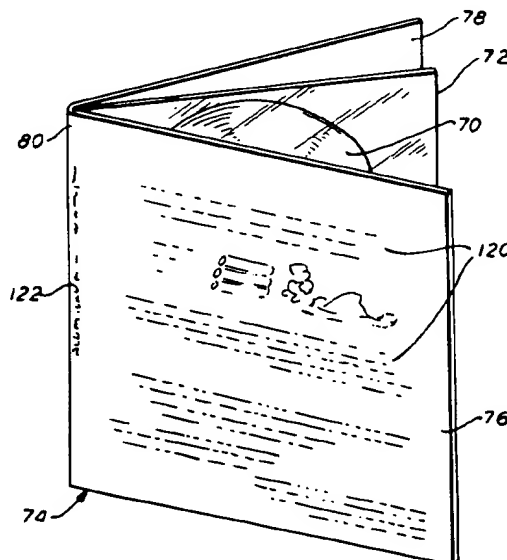


FIG. 1

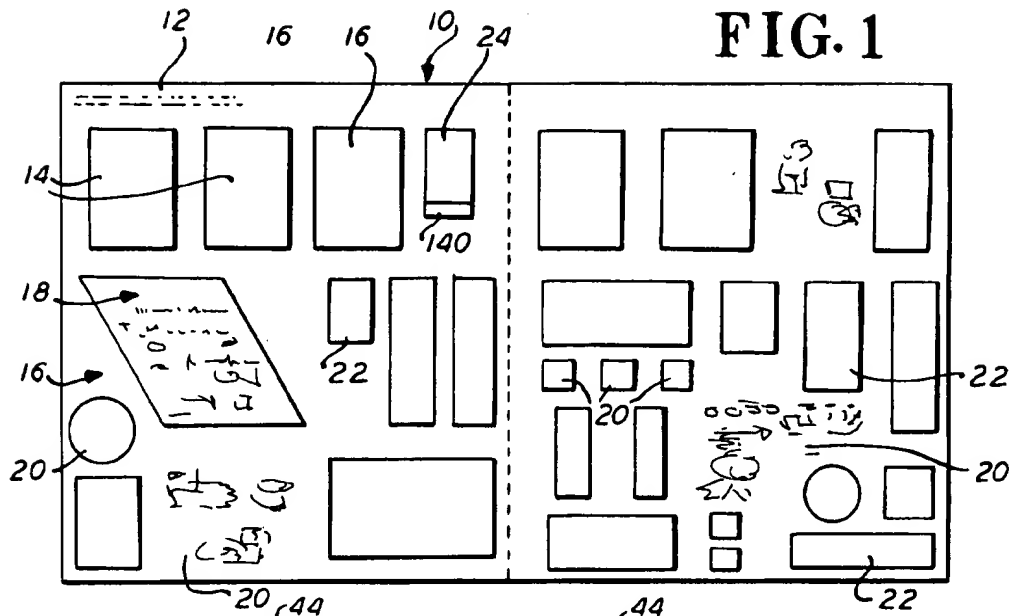
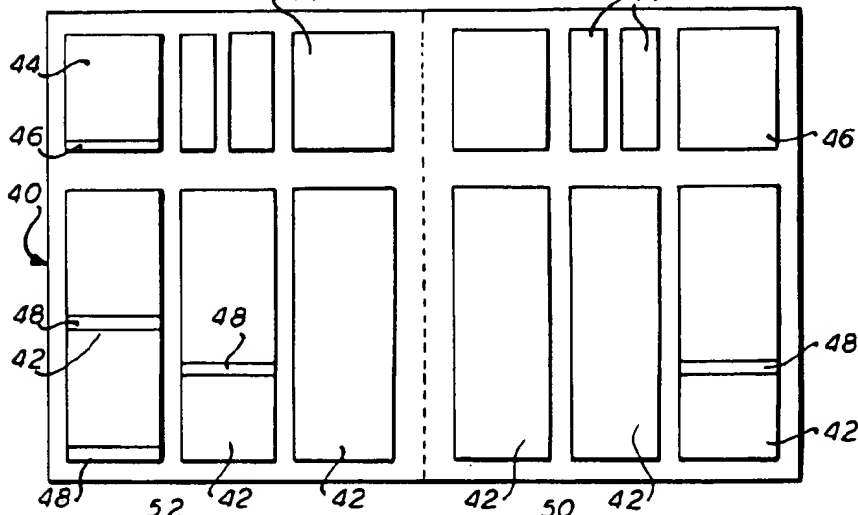
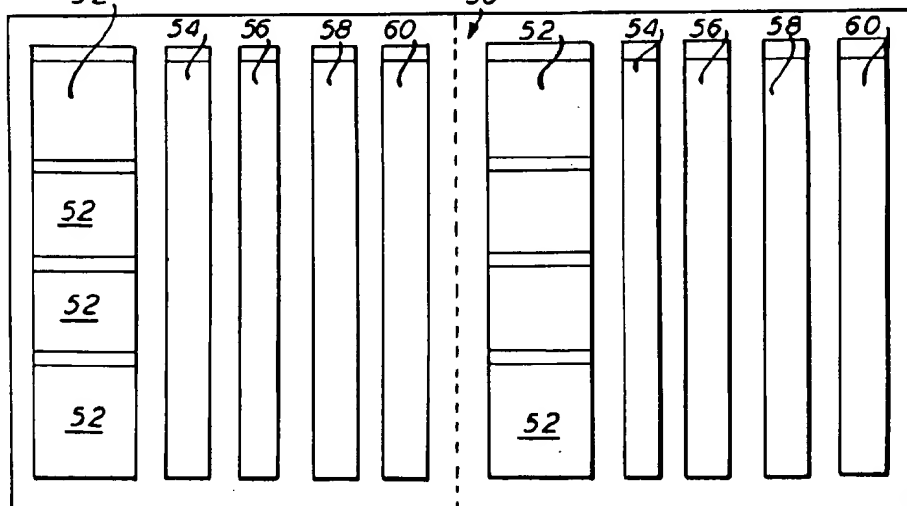
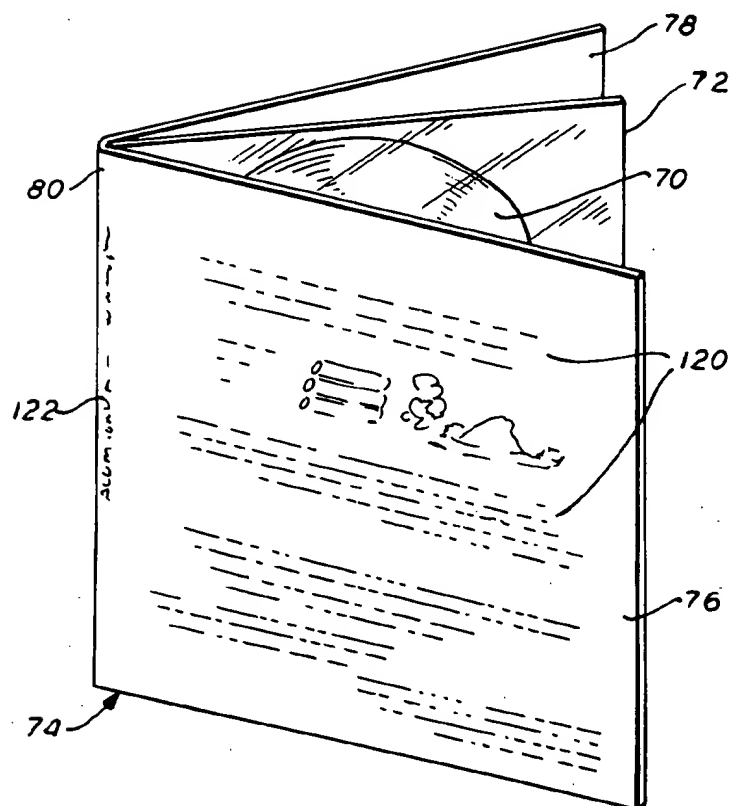


FIG. 2

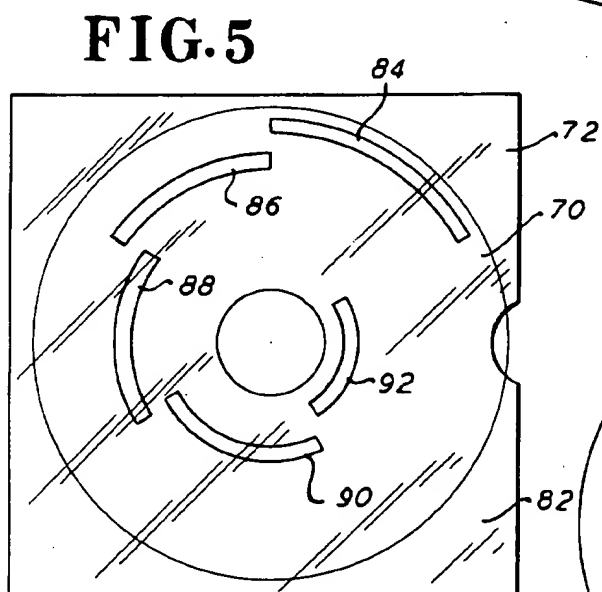


**FIG. 3**

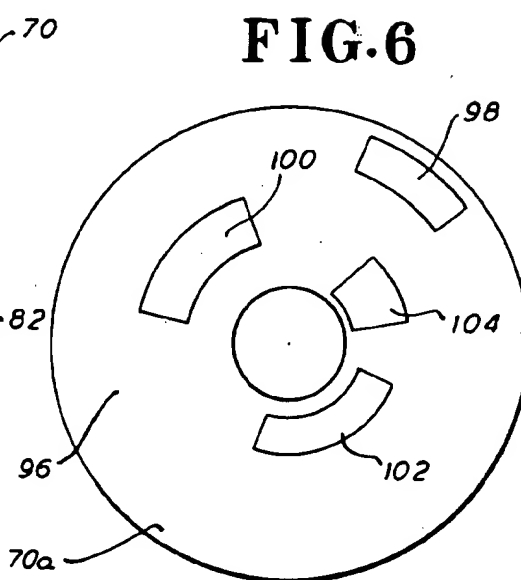




**FIG. 4**



**FIG. 5**



**FIG. 6**

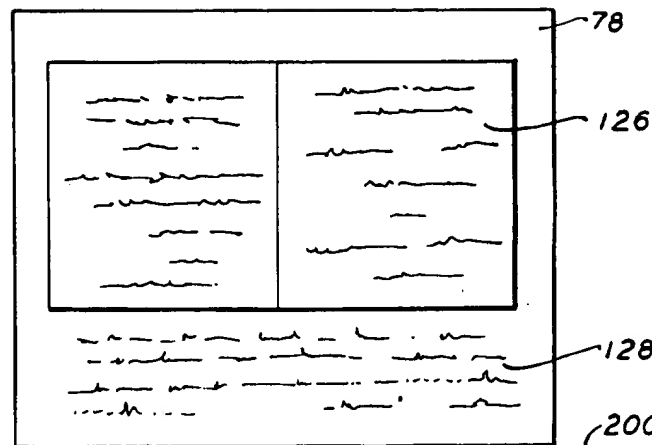


FIG. 7

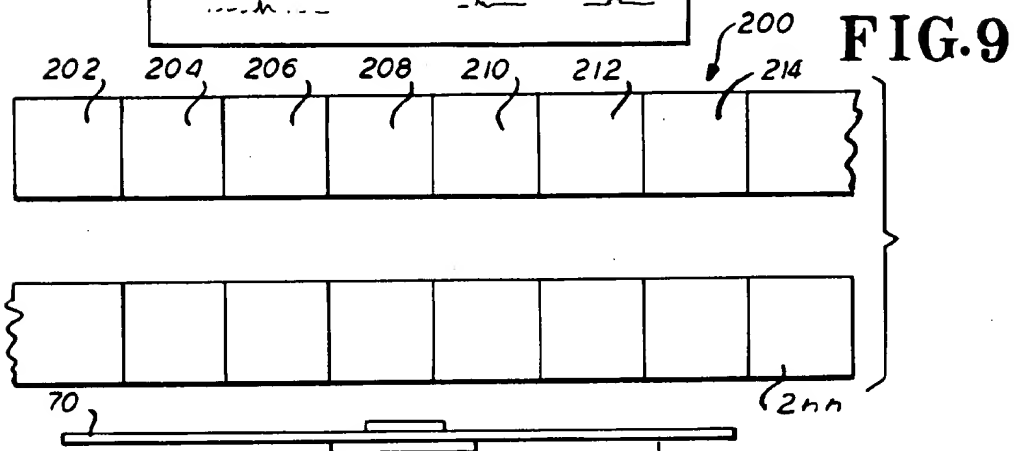


FIG. 9

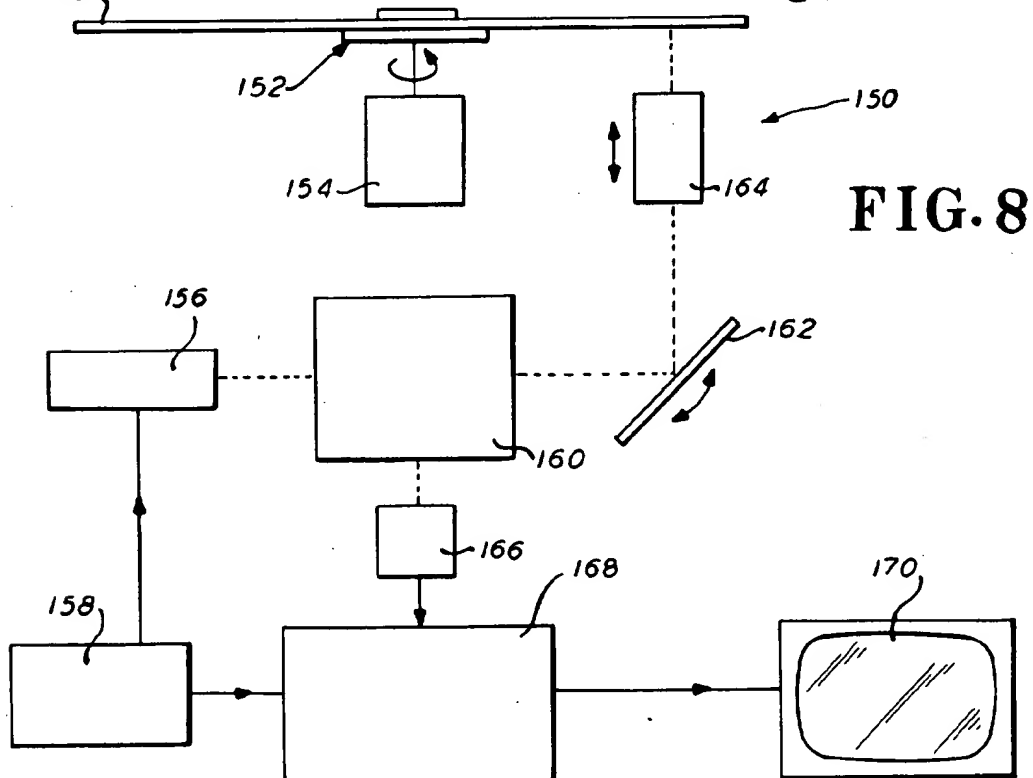


FIG. 8

## AUDIO VISUAL INFORMATION SYSTEM

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

### BACKGROUND OF THE INVENTION - FIELD OF APPLICATION

This invention relates to an information system, and more particularly to a system for arranging indexing and cross-referencing information pictorially and by words for audio visual presentation.

### BACKGROUND OF THE INVENTION - DESCRIPTION OF PRIOR ART

The quest for information, or research as it is more formally called, is carried on in many ways. One may go to texts, magazine articles, newspapers or like material when pursuing information about a particular topic. No such research is considered to be complete without looking up the subject in an encyclopedia type reference text. In fact, a great deal of such research, especially by students in various grades of school and even college, both begins and ends with the encyclopedia.

Many persons, school students and otherwise, find reading printed texts, even heavily illustrated printed texts, cumbersome and difficult. A significant portion of the population lacks the ability to understand by reading alone, and learns better when printed text is supported by audio and audio visual material. But available research material is almost invariably only available in printed form.

More often than not a number of students are assigned the identical topic to research. But encyclopedia type research texts are expensive and only a few libraries can afford more than one set of a particular encyclopedia. Thus each student must wait their turn. Some may even find it impossible to get a time to review the encyclopedia and may have to do without this invaluable source of information.

When describing to a group how to use an encyclopedia; or when presenting the results of research from an encyclopedia to a group, one can either hold up the text for the group to view or pass the text around for better understanding. If equipped with a projector the pertinent encyclopedia pages may be shown on a screen. But all of the above make for difficult presentations, may subject the text pages to tearing, marking or other damage and require an articulate speaker if an interesting and understandable presentation is to be made.

### SUMMARY OF THE INVENTION

It is therefore an object of this invention to provide a novel and improved information system.

It is another object of this invention to provide a novel and improved audio visual information system.

It is a further object of this invention to provide a novel and improved system for storing topical information for audio visual presentation.

It is yet a further object of this invention to provide a novel and improved information system wherein topical information prepared for audio visual presentation is cross-referenced with like alphabetically and topically arranged printed information.

It is yet still a further object of this invention to provide a novel and improved information system wherein

encyclopedia type reference texts are recorded in their entirety for audio visual presentation.

It is yet still a further object of this invention to provide a novel and improved jacket for housing an audio visual recording.

It is yet still a further object of this invention to provide a novel and improved audio visual recording jacket wherein information corresponding to the recorded information is printed by words and illustrations upon the jacket.

It is yet still a further object of this invention to provide a novel and improved audio visual recording.

It is yet still a further object of this invention to provide a novel and improved manner of correlating sub-topical information on an audio visual recording to the position on the physical recording where the sub-topical information is recorded.

In carrying out the invention, according to the preferred embodiment, there is provided an information system utilizing audio visual recording for topical presentation of alphabetically arranged expanded entry type descriptions and comprehensive heavily illustrated encyclopedia type reference material; and, in fact, for presentation of entire texts of such expanded dictionary type definitions and encyclopedia arranged information. Cross-referencing of the topical audio visual recordings into the alphabetical and illustrated texts provides for a highly correlated reference work.

Other objects, features, and advantages of the invention, in its details of construction and arrangement of parts, will be seen from the above, from the following description of the preferred embodiment when considered in conjunction with the drawing and from the appended claims.

### BRIEF DESCRIPTION OF THE DRAWING

In the drawing:

FIG. 1 is a specimen layout from an illustrated comprehensive text showing the relationship between the elements thereof which incorporate the instant system;

FIG. 2 is a specimen layout of a page from an illustrated alphabetical text showing the relationship between the elements thereof which incorporate the instant invention;

FIG. 3 is a specimen layout of a page from an illustrated comprehensive index showing the relationship between the elements thereof which incorporate the instant invention;

FIG. 4 is a schematic showing of a topical information jacket which houses an audio visual recording of a topic corresponding to one of the topics which appear in the illustrated comprehensive text of the type which would be displayed on a page as shown in FIG. 1 and which incorporate the instant invention;

FIG. 5 is a schematic showing of a form of sleeve from the information jacket of FIG. 4 which houses and protects the recording and which incorporates the instant invention;

FIG. 6 is a modified form of information recording for use with the information jacket of FIG. 4 and which incorporates the instant invention;

FIG. 7 is a specimen layout of the back of the information jacket of FIG. 4;

FIG. 8 is a schematic layout of a playback system for utilizing the audio visual recording of the instant invention; and

FIG. 9 is a schematic frame by frame layout of a typical topical audio visual recording as same might be displayed by a system such as shown in FIG. 8.

#### DESCRIPTION OF THE PREFERRED EMBODIMENT

For convenience the invention will be described as applied to an information system including a plurality of audio visual recordings each in the form of a disc adapted for optical scanning and playback through a home type television set, and wherein the audio visual recordings are of selected topics from an encyclopedia type text heavily illustrated in color and with insertions from an alphabetical text of expanded entry type descriptions. A jacket for housing each such optical audio visual recording is provided on its back page with printed reproductions of part of all of the comprehensive text article and with one or more pertinent alphabetical text descriptions and carries a sleeve for the recording with either the sleeve or the recording itself printed with sub-topic titles or illustrations at positions indicative of the recorded positions corresponding to sub-topic. It should be understood, nevertheless, that without departing from the scope of the invention that subject information system may be recorded on tape or other suitable non-disc forms, may be played back through non-optional scanning and by closed circuit and/or other suitable television type presentation means; that the recorded information may be not only topical but also the entire comprehensive illustrated text and alphabetical illustrated text with their respective indexes or for that matter, the text of any dictionary, encyclopedia or other reference work; that the jacket for housing the recording may have the information printed on any portion thereof or not at all; and that other suitable means may be provided for indicating where in the recording a sub-topic begins if such be desired at all.

With reference to FIG. 1 there is generally shown at 10 a specimen page from a comprehensive illustrated text as described in our co-pending application entitled "System for Arranging and Retrieving Information" and which was filed on Sept. 25, 1975 as application Ser. No. 616,865. In that application each such page, or group of pages, forming the comprehensive illustrated text is described as including, under a subject heading 12 a main word text 14 and a set of color illustrations 16 including a key illustration 18 and ancillary illustrations 20 accompanied by ancillary text 22, and often consecutively numbered to facilitate the flow thereof in an orderly manner.

A cross-reference listing 24 is conspicuously displayed in a marginal position on each such layout 10.

Also described in my above mentioned application is an illustrated alphabetically arranged text 40 (FIG. 2) including a plurality of alphabetically arranged expanded short entry type word descriptions 42, arranged in a particular portion of the page; accompanied by a number of reproductions of the key illustrations 44 from the comprehensive illustrated text 10 also displayed in a particular portion of the printed page. The alphabetical text is described in said application as including cross-reference information to the comprehensive illustrated text as part of the captions 46 to said reproductions 44 of said key illustrations and as part of the printed text 42 as shown at 48.

An illustrated comprehensive index 50 (FIG. 3) is additionally described in my aforementioned co-pend-

ing application. Index 50 is described as including reduced size reproductions 52 of full text pages from the comprehensive illustrated text 10 adjacent to which appear columns 54, 56, 58 and 60 respectively of cross-referencing to other information both within and outside of the information system. It will be appreciated that the index may be located at any place in the illustrated alphabetical text or the illustrated comprehensive text or in a volume by itself. If the index appears at the front of a volume, it may be referred to as a table of contents or other suitable term.

To accompany, compliment and supplement the aforementioned "System For Arranging and Retrieving Information" there are provided a number of topical video visual recordings such as the one illustrated at 70 in FIG. 4. Recording 70 is shown as housed in a sleeve 72 carried by a jacket 74 having a front cover 76, and a rear cover 78 connected to a spine 80.

While each such recording 70 is herein described as for a single topic corresponding to a topic from the comprehensive illustrated text 10; it should be realized that space requirements for properly covering the topic may dictate the use of multiple recording 70 for a single topic. In the alternative a single recording 70 may cover more than one such topic if the topic content so permits.

Also contemplated by the instant system is a single recording 70, or multiple recordings 70, which encompass the entire illustrated comprehensive text 10, illustrated alphabetical text 40 and illustrated comprehensive index 50.

Recording 70 is shown as a disc but it should be realized that tape or other suitable recording means may just as easily be utilized.

In FIG. 5 sleeve 72 is shown removed from jacket 74 but with a recording disc 70 still disposed therein. Sleeve 72 is preferably of transparent material such as plastic or the like; but other suitable materials may be used. Printed upon the surface 82 of sleeve 72 are sub-topic titles 84, 86, 88, 90 and 92 which correspond to sub-topics of the topic recorded in audio visual manner upon recording 70. Titles 84, 86, 88, 90 and 92 are also positioned upon surface 82 in alignment to the position on recording 70 where the sub-topic information is recorded. Also, the frame numbers themselves may be printed on the sleeve. In this manner the user may easily position the playback equipment for recording 70 so as to begin at a particular sub-topic instead of having to either start at the beginning of recording 70 and play everything until the desired sub-topic appears, or merely guessing hit or miss until the user finds the place desired to start.

Alternatively recording 70 may have printed directly upon its recorded surface references to such sub-topics and/or frame numbers. This appears for a recording 70a as shown in FIG. 6 wherein the surface 96 of recording 70a has reproductions of the illustrations 18, 20 from the comprehensive text 10 printed thereon at 98, 100, 102 and 104. Here again the illustrations are positioned to correspond to the position of recording of their respective sub-topic or frame.

Printed titles such as 84, 86, 88, 90 and 92 may accompany or be substituted for illustrations 98, 100, 102, 104 of FIG. 6; while illustrations such as 98, 100, 102 and 104 may accompany or be substituted for the titles 84, 86, 88, 90 and 92 of FIG. 5. The important object is to provide some form of index to direct the user to a selected recorded area of recording 70.



Jacket 74 may have displayed, as by printing, upon the facing page of front cover 76 information 120 (FIG. 4) including words and illustrations, indicative of the topic or topics recorded upon recording 70 housed therewithin. A title 122 may likewise appear upon spine 80.

On the facing page of back cover 78 of jacket 74 there is reproduced, as by printing or other suitable means, at 126 a copy of the pages of the comprehensive illustrated text (such as shown at 10 in FIG. 1) corresponding to the topic of recording 70. Also reproduced on back cover 78 as at 128 is a copy of pertinent alphabetical text descriptions compiled from the illustrated alphabetical text as described for FIG. 2.

Each topical recording 70 is in turn cross-referenced into the comprehensive illustrated text, as described for FIG. 1, and will appear therein either in the cross-reference listing 24 or at a position 140 closely adjacent thereto and so as to be conspicuous.

Cross-referencing of the availability of a topical recording 70 will also appear in the illustrated alphabetical text, as described for FIG. 2. Such cross-referencing may accompany the illustrations appearing at 44 by inclusion in captions 46 or adjacent or proximate thereto. They may appear also or additionally as part of the cross-referencing 48 within texts 42.

To make the system even more comprehensive cross-referencing to audio visual recordings 70 also are inserted with the columnar material 54, 56, 58, 60 of the comprehensive illustrated index described with reference to FIG. 3. Such cross-referencing may appear within one of the columns 54, 56, 58, 60 or may appear as an additional column or in any other conspicuous manner.

The audio visual information recorded upon recording 70 may be presented to one or more observers on playback equipment 150 such as that shown in FIG. 8. Equipment 150 is of the type conventionally available to the public and more commonly known as "Philips and MCA Videodisc System". In the schematic of FIG. 8, recording 70 is placed upon videodisc player 152 which is in turn driven by a motor 154 powered from a suitable source and controlled in conventional manner by suitable switches. A laser 156, powered from a supply 158 co-operates with optics 160, a mirror 162 and an objective 164 to transmit successive portions of recording 70 through a light sensitive device 166 to video and servo electronics 168 which in turn control and present the recorded information upon a conventional home TV set 170.

The recorded information is thereby presented successively in frame by frame manner upon the screen of set 170. Suitable controls are provided for equipment 150 to advance same or back same up to any selected position and to freeze any display upon the screen of set 170.

It should be understood that other suitable playback equipment may be utilized; such as the RCA "SelectraVision Videodisc system" and that closed circuit as well as other suitable television presentation equipment may be used to view the recorded information.

When preparing recording 70, if desired, appropriate musical and other sound effect background may be recorded into recording 70 by conventionally available techniques. In a similar manner a voice over reading or description of the text material may be provided to further enhance the understanding thereof.

A typical frame by frame arrangement for a topical recording 70 is schematically illustrated in FIG. 9 wherein a strip 200 is shown beginning with frame 202 and proceeding consecutively through frame 204, 206, 208, 210, etc to 2nn.

Frame 202 would carry the title for recording 70 corresponding to the topic recorded thereon. Frame 206 and 208 would display reproductions of the entire pages from the comprehensive illustrated text (as described with reference to FIG. 1) and reproductions of pertinent expanded word descriptions from the illustrated alphabetical text (as described with reference to FIG. 2).

Thereafter in frames 210, 212, 214, etc. the entire topic would be covered by sub-topic and where pertinent by reference to sections of the comprehensive illustrated text and expanded word descriptions.

As previously set forth, it is an inherent capability of playback equipment 150 to be able to present the information recorded upon recording 70 either in a continuous manner, or frame by frame freezing each frame for a desired period of time (or a few frames at a time so that the frame appears to be frozen) as controlled by the operator. Accordingly when information is recorded upon recording 70 a suitable number of frames, 202-210 etc. must be recorded for each image to maintain same on the viewing screen long enough to be seen and studied when the playback equipment 150 is in a continuous mode of operation. This is accomplished by conventional techniques well known in the field.

On the other hand, some written and even pictorial information is inserted on recording 70 to be seen only in a frame by frame freeze mode of operation for playback equipment 150. This is accomplished by recording such information on only a single frame, 202-210 etc. Thus, when recording 70 is played in a continuous manner the frame so recorded will flash upon the viewing screen; but only for such a short period of time that its persistency will be too short to allow viewing thereof. In fact, the viewer will not even be aware that it appeared, except maybe subliminally. When it is desired to view the single frame one need only run playback equipment 150 continuously until the frame approaches and then frame by frame until the information appears on the screen.

From the above description it will thus be seen that a novel and improved audio visual information system has been provided; which system provides for recording for audio visual presentation of expanded word entry type descriptions information, and comprehensive illustrated encyclopedia type text information and the corresponding cross-referencing in a conspicuous manner into said word entry text and encyclopedia text of the availability of said audio visual information.

It is understood that although we have shown the preferred form of my invention that various modifications may be made in the details thereof without departing from the spirit as comprehended by the following claims.

We claim:

1. An audio visual information system comprising:

(a) first information means consisting of a plurality of graphic displays each concerning a particular selected topic;

(b) each of said graphic displays including a main word text and a pictorialized description each sufficient to describe its particular selected subject without reference to the other and each disposed in

- a separate and distinct location within its graphic display;
- (c) each pictorialized description including a key illustration and a plurality of ancillary illustrations arranged in a sequence, the key illustrations of said plurality of graphic displays being sequenced.
- (d) second information means constituting a graphic arrangement of alphabetically set out expanded word descriptions of a plurality of selected topics and a reproduction of selected key illustrations from said graphic displays of said first information means when such key illustrations pertain to said topics and said key illustrations being in correlation to the alphabetical arrangement of said word descriptions; and
- (e) third information means constituting a recording for audio visual playback including audio visual display of a selected topic from said first information means and including at least a key illustration related to said topic, said recording being provided with index means for locating said topic, whereby the user of the system may retrieve the information of the above information means without substantial resort to text material.
2. The audio visual information system of claim 1 including:
- (f) fourth information means constituting a graphic index including reproductions of said key illustrations of said first information means, and said key illustrations being arranged according to (c) or (d) with each such key illustration disposed adjacent a listing of selected types of information related to its particular topic.
3. The audio visual information system of claim 2 wherein said first information means, said second information means and said fourth information means are recorded for audio visual playback.
4. The audio visual information system of claim 2 wherein additional information not forming part of said first, second or fourth information means is recorded on said third information means recordings.
5. The audio visual information system of claim 1 wherein said third information means includes pertinent graphic arrangements of word descriptions from said second information means.
6. The audio visual information system of claim 5 wherein said graphic displays of said first information means included in said fourth information means being reduced in size when compared to said graphic displays as reproduced for said first information means.
7. The audio visual information system of claim 1 wherein said key illustrations when reproduced for said second information means being grouped together separate from said word definitions at a selected location in said graphic arrangement and being reduced in size when compared to the size therefore as displayed in said first information means.
8. The audio visual information system of claim 1 wherein said recording of said fourth information means is provided with sound.
9. The audio visual information system of claim 8 wherein said sound is background music, sound related to the subject matter to be displayed and voice over describing the information to be displayed.
10. The audio visual information system of claim 1 including:
- record storing means in the form of a jacket for receiving and storing said recording and upon which,

in addition to indicia for indicating the topic recorded upon the record, there is displayed text as recorded in the reference work.

11. The audio visual information system of claim 10 wherein said jacket also has displayed thereon expanded word descriptions related to the recorded topic.
12. The audio visual information system of claim 10 wherein said jacket includes a sleeve within which the record is stored.
13. The audio visual information system of claim 12 wherein said sleeve is formed from transparent material.
14. The audio visual information system of claim 12 wherein said sleeve has displayed thereon indicia indicative of sub-topics recorded on said recording and wherein said indicia are positionally located on a surface of said sleeve so that when said record is stored thereon the indicia is disposed in alignment with the corresponding information as recorded on said record means.
15. The audio visual information system of claim 14 wherein said indicia are words defining the sub-topic title.
16. The audio visual information system of claim 15 wherein said indicia are graphic pictorial illustrations indicative of the sub-topic information.
17. The audio visual information system of claim 14 wherein said indicia are frame designations.
18. The audio visual information system of claim 1 wherein said recording is in the form of a disc.
19. The audio visual information system of claim 1 wherein said recording is recorded for optical sensing and playback.
20. The audio visual information system of claim 1 wherein said recording has displayed thereon indicia indicative of sub-topics recorded on said record means and wherein said indicia are positionally located on said record means in positions corresponding to the locations where the sub-topic information is recorded.
21. The audio visual information system of claim 20 wherein said indicia are words defining the sub-topic title.
22. The audio visual information system of claim 20 wherein said indicia are graphic pictorial illustrations indicative of the sub-topic information.
23. The audio visual information system of claim 1 wherein
- (a) at least some of said information is recorded upon said recording for continuous viewing; and
  - (b) some other of said information being recorded upon said recording for frame by frame viewing;
  - (c) said other of said information being recorded on said recording on at least one frame so that in a continuous viewing of said recorded information the lack of many multiple frames of the other information inhibits viewing thereof.
24. The audio visual information system of claim 23 wherein said at least one frame is a single frame.
25. An audio visual information system comprising:
- a. first information means comprising pictorial information concerning a particular selected topic;
  - b. second information means comprising first text information means comprising pages of illustrated text and word descriptions relating to said selected topic, and second text information means comprising comprehensive sub topic information covering said topic and reference to pages of the illustrated text and said descriptions;

9

- c. recording means comprising a recording for audio visual playback including audio visual display of said pictorial and text information; wherein
- d. part of said pictorial information being recorded upon said recording means for continuous viewing;
- e. said first and second text information means being recorded upon said recording means for frame by frame viewing; and
- f. said first and second text information being recorded on said recording means on at least one frame so that in a continuous viewing of said pictorial information the lack of many multiple frames of the text informa-

10

tion inhibits viewing thereof, whereby the user may stop the continuous viewing of the topical pictorial information to study the first text information means relative to the topical information and then selectively study the comprehensive sub topic information with reference to related sections of said illustrated text.

26. The audio visual information system of claim 25, wherein some of said pictorial information is recorded upon said recording means for continuous view and other of said pictorial information is recorded on said recording means for frame by frame viewing.

\* \* \* \* \*

15

20

25

30

35

40

45

50

55

60

65



US006003090A

**United States Patent** [19]

Puranik et al.

[11] **Patent Number:** 6,003,090[45] **Date of Patent:** Dec. 14, 1999

[54] **SYSTEM FOR DETERMINING NETWORK CONNECTION AVAILABILITY BETWEEN SOURCE AND DESTINATION DEVICES FOR SPECIFIED TIME PERIOD**

[75] Inventors: **Vineeta Puranik**, Nashua; **Utpal Datta**, Bedford, both of N.H.; **Rachael Barlow**, Groton, Mass.

[73] Assignee: **Cabletron Systems, Inc.**, Rochester, N.H.

[21] Appl. No.: 08/842,049

[22] Filed: Apr. 23, 1997

[51] Int. Cl.<sup>6</sup> ..... H04M 7/06; H04Q 11/04

[52] U.S. Cl. .... 709/235; 709/224; 709/225; 709/238; 370/232; 370/229; 370/236

[58] Field of Search ..... 370/236, 232, 370/229; 701/118, 117; 395/200.54, 200.56; 379/133; 364/488; 709/235, 224, 225, 238

[56] **References Cited****U.S. PATENT DOCUMENTS**

4,873,517	10/1989	Baratz et al.	370/236
4,931,941	6/1990	Krishnan	701/118
4,979,118	12/1990	Kheradpir	701/117
5,581,610	12/1996	Hooshiari	379/133

5,598,532	1/1997	Liron	364/488
5,644,717	7/1997	Clark	395/200.54
5,727,157	3/1998	Orr	709/224
5,790,431	8/1998	Ahrens et al.	395/200.56

**OTHER PUBLICATIONS**

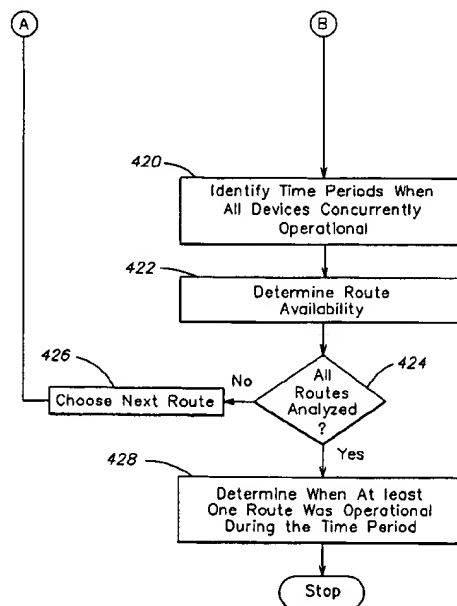
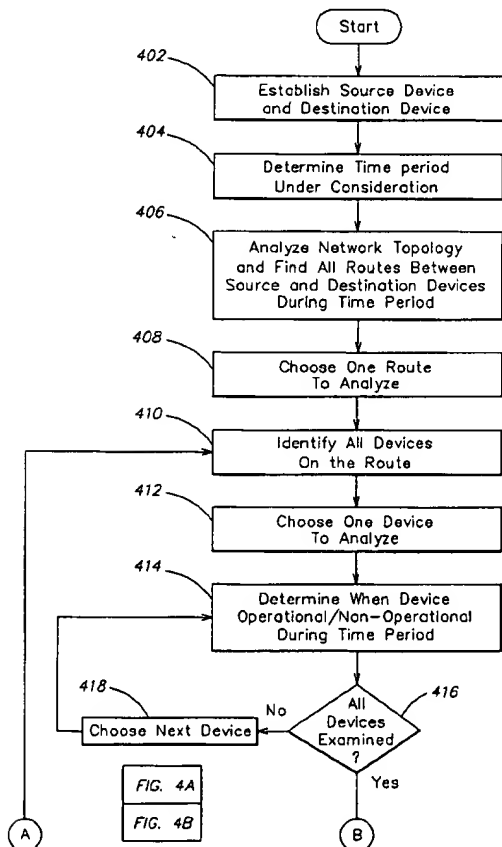
Ronald O. Brown, "Network Reliability and Availability: Tricky Calculations Mean Managers Frequently Do Not Get What They Need", *Manager's Notebook*, part 1, pp. 1-5 and part 2, pp. 1-5, Dec. 27, 1995.

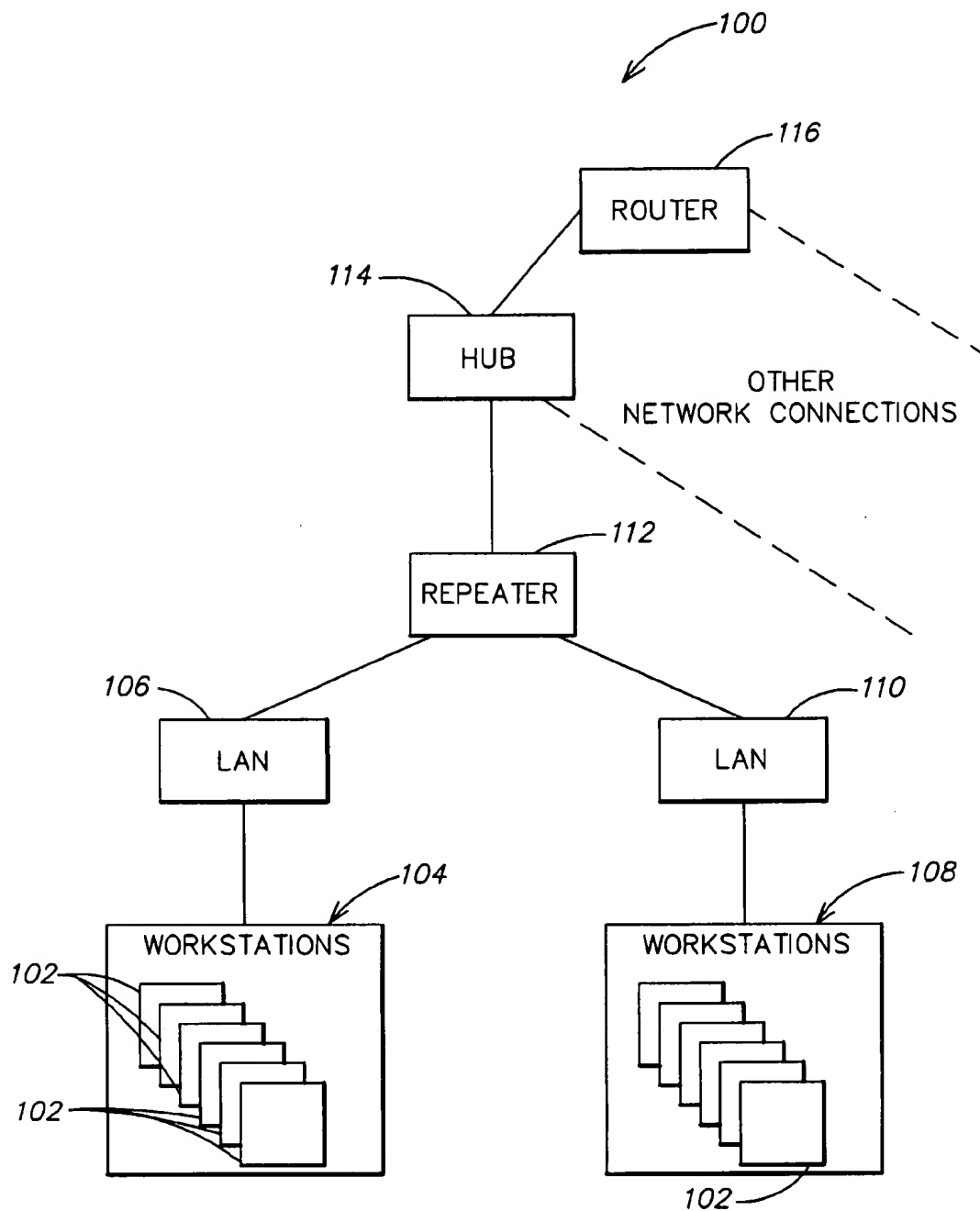
*Primary Examiner*—Krisna Lim

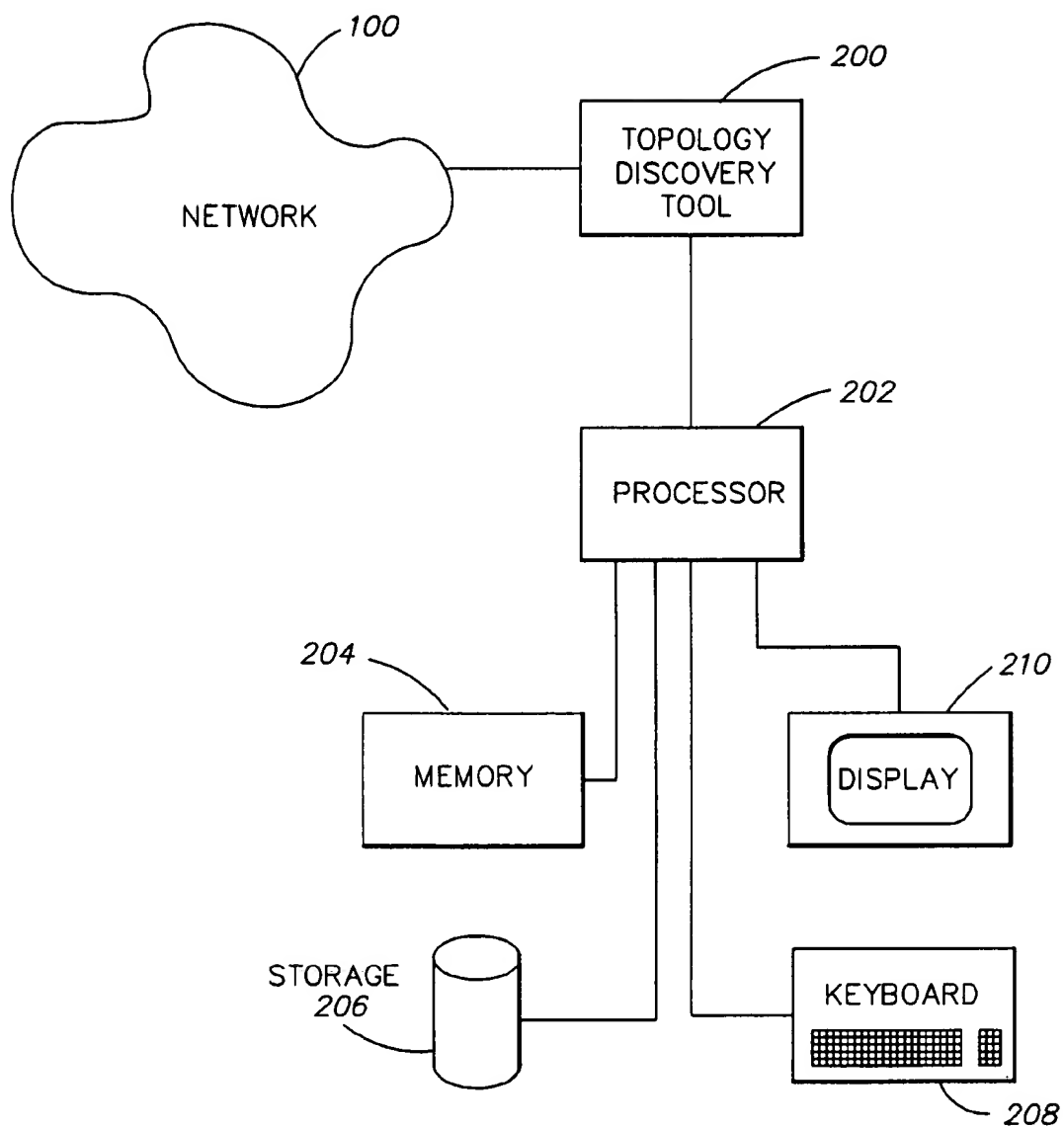
*Attorney, Agent, or Firm*—Wolf, Greenfield & Sacks, P.C.

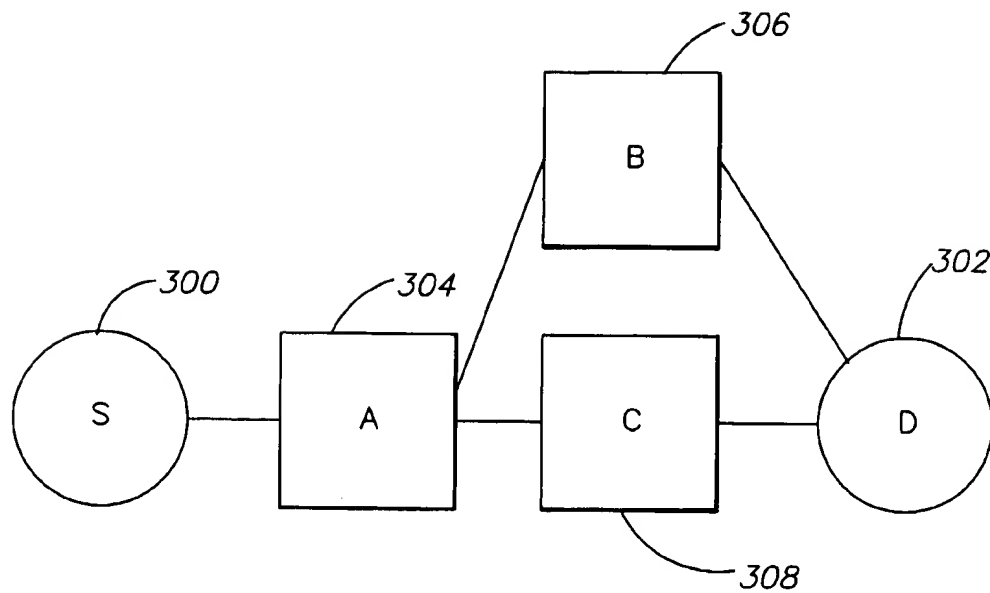
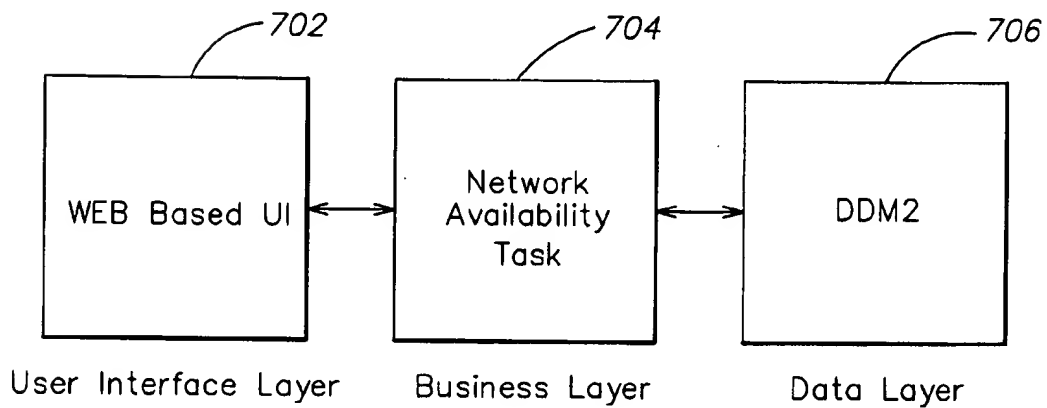
[57] **ABSTRACT**

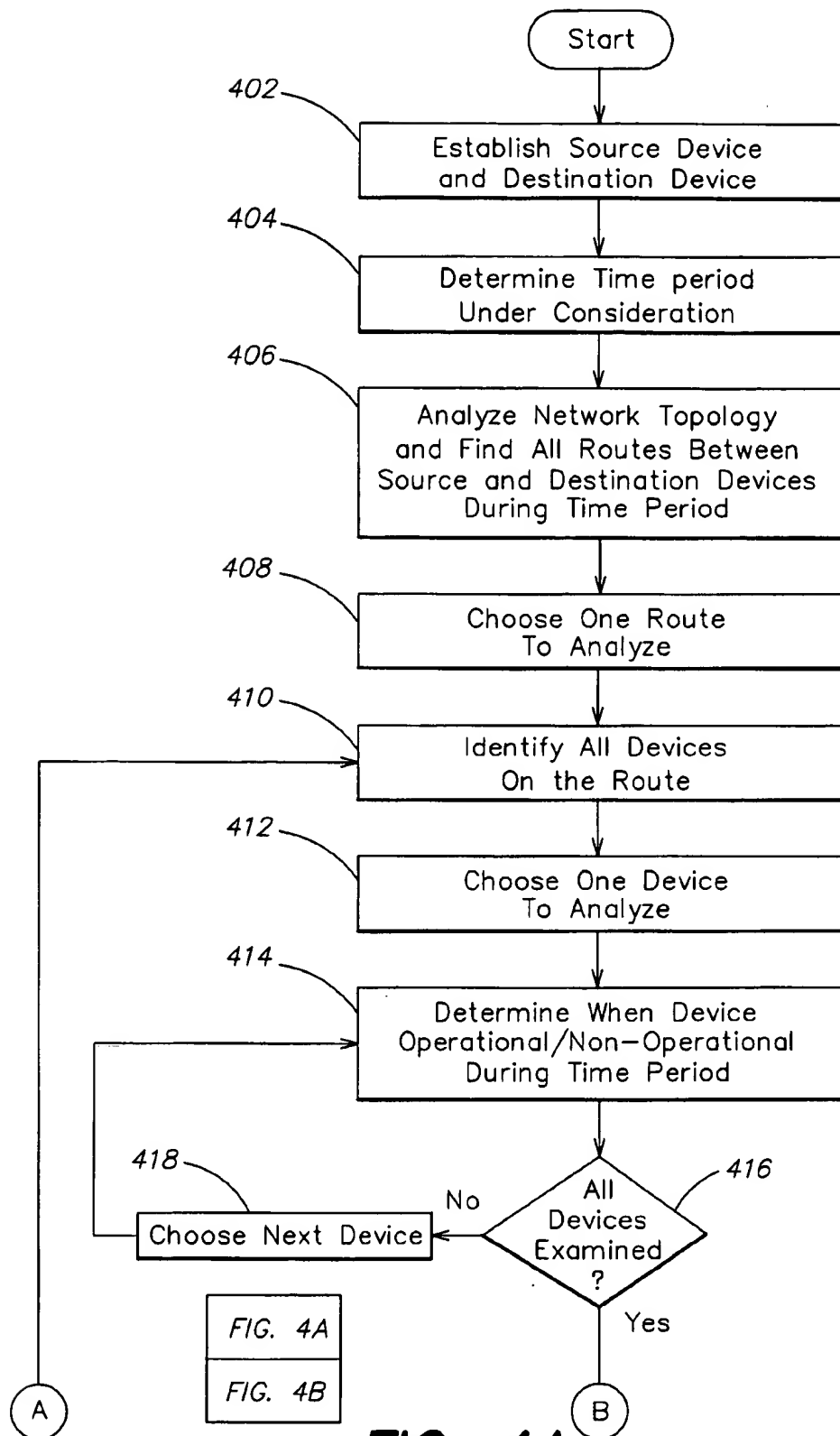
Availability of a computer network is determined by analyzing specific pairs of source/destination devices in the network and alternative paths between them. The topology of the network is analyzed so as to determine all paths between the devices and the availability of devices on each path is determined. If any one alternative path is available, this is included in the determination of network availability. Further, a relative weight may be assigned to various devices/paths on the network depending on usage or other parameters. The availability information is then presented in the format of a report card where specific source/destination pairs and the paths therebetween are chosen as indicia of the network's availability.

**19 Claims, 10 Drawing Sheets**

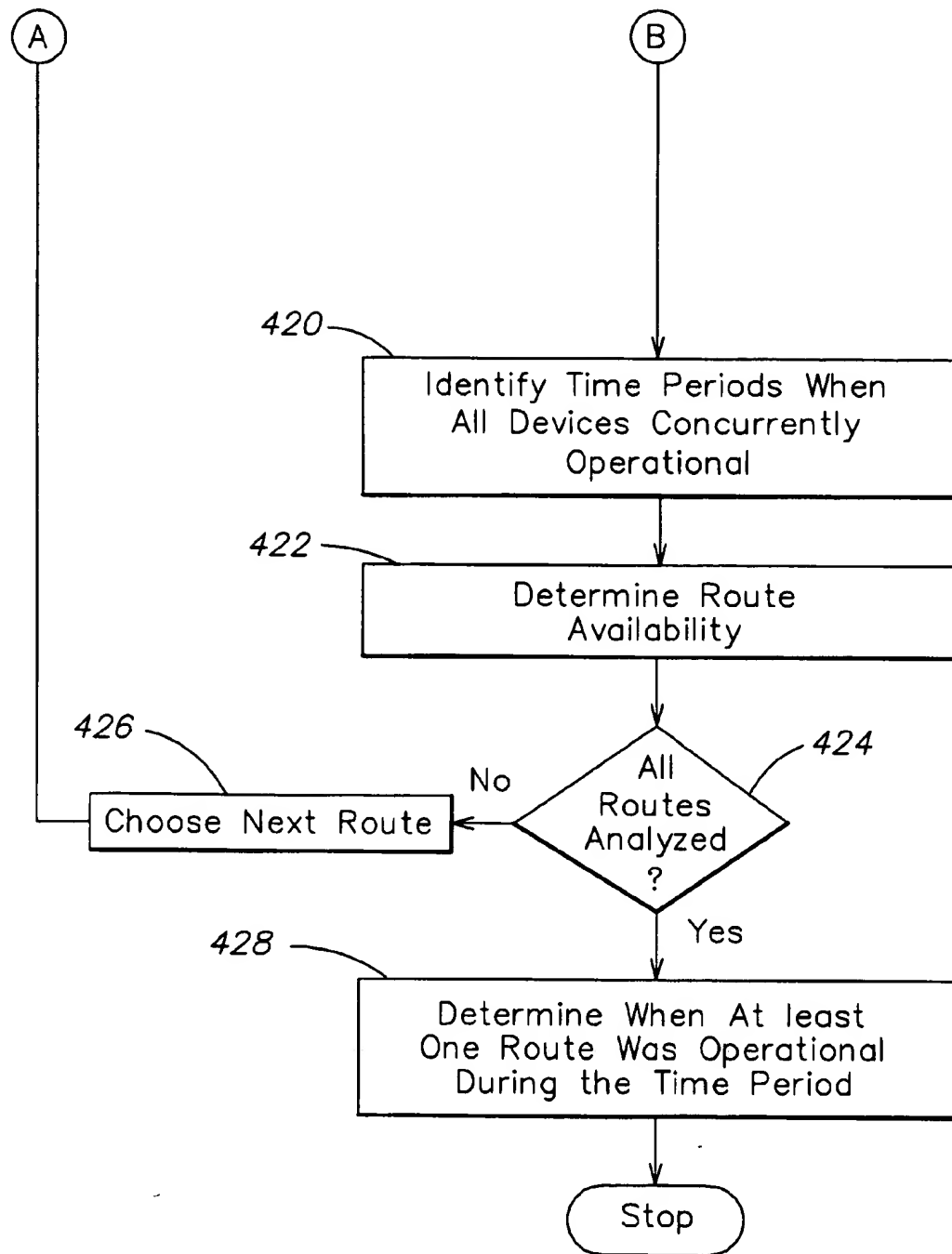
**FIG 1**

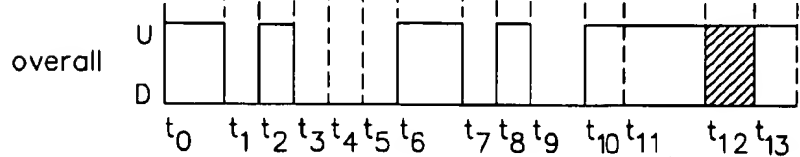
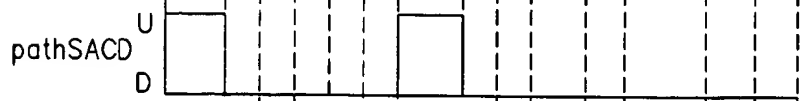
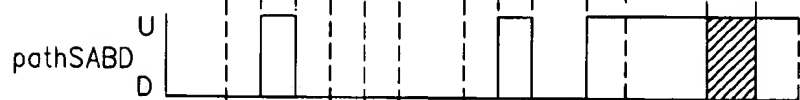
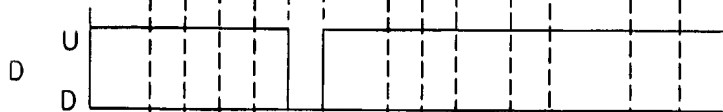
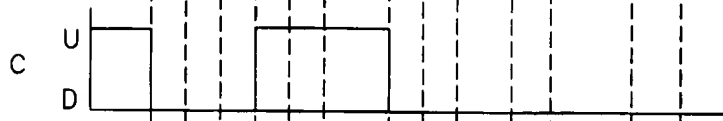
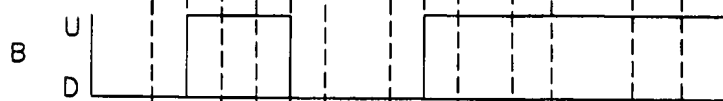
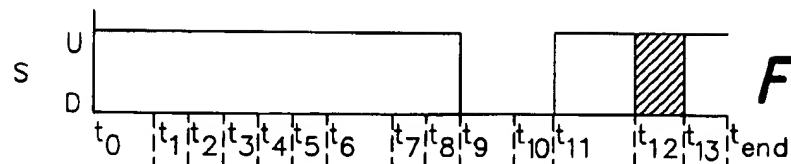
**FIG. 2**

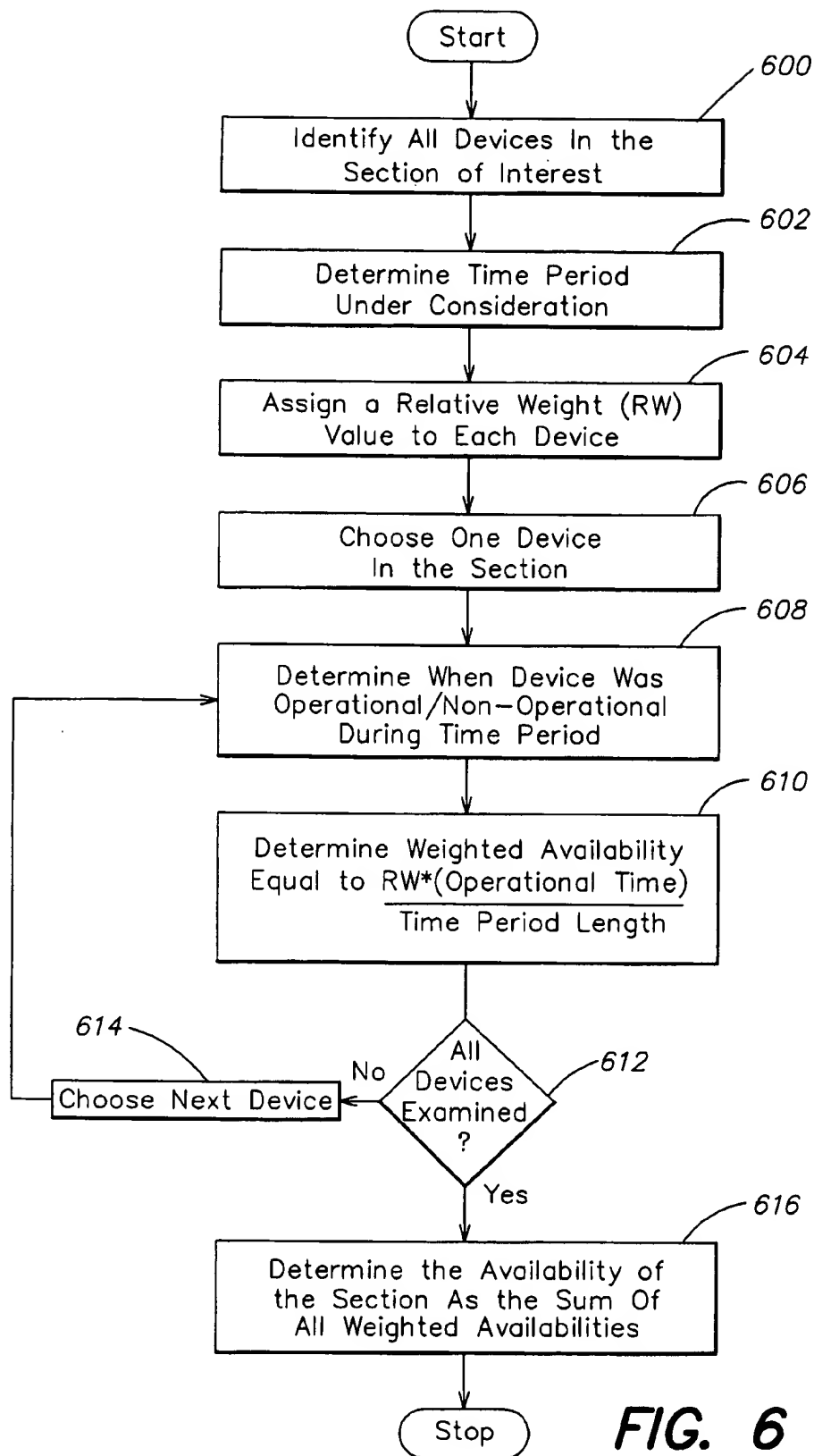
**FIG. 3****FIG. 7**

**FIG. 4A**



**FIG. 4B**

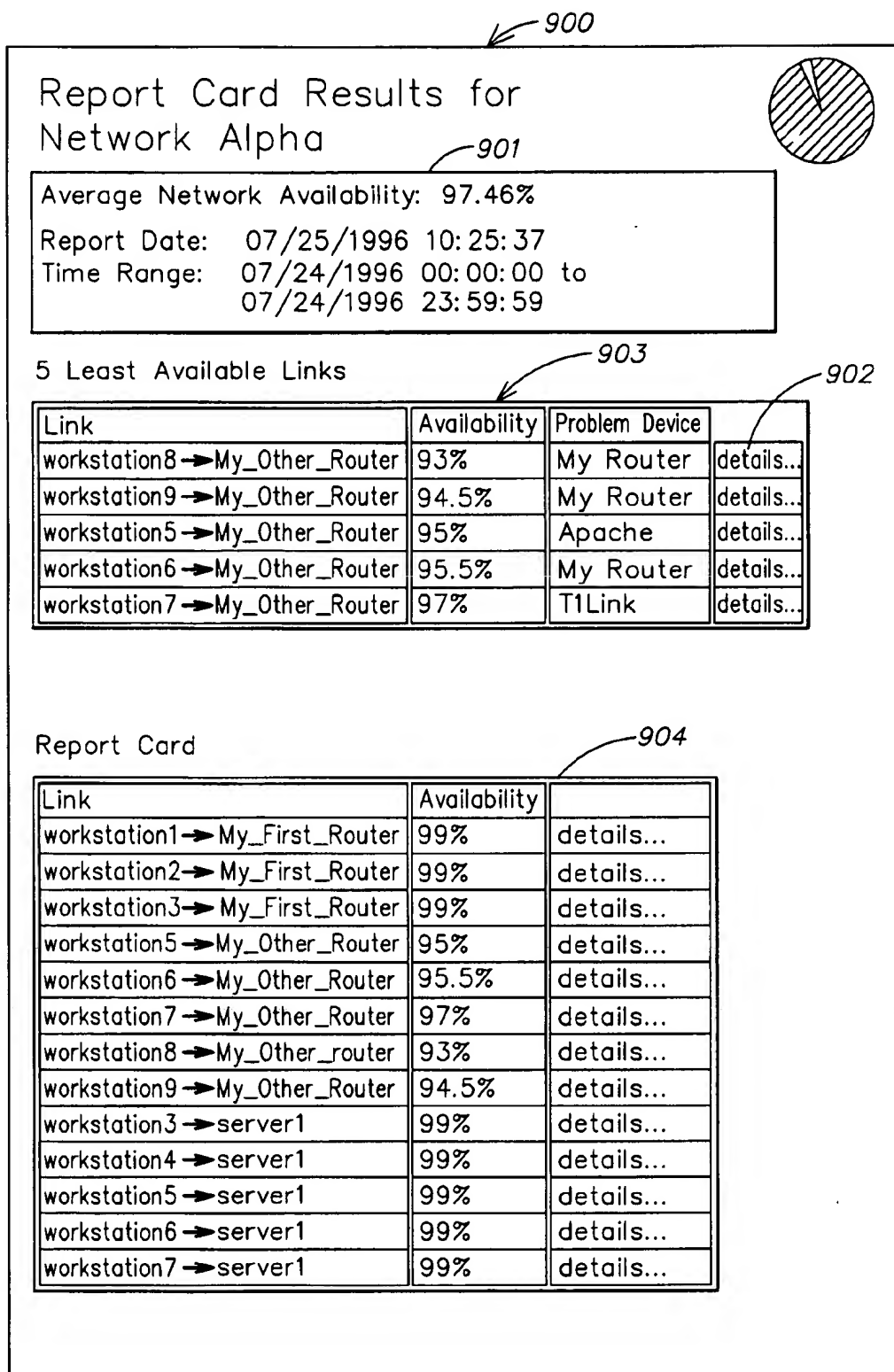


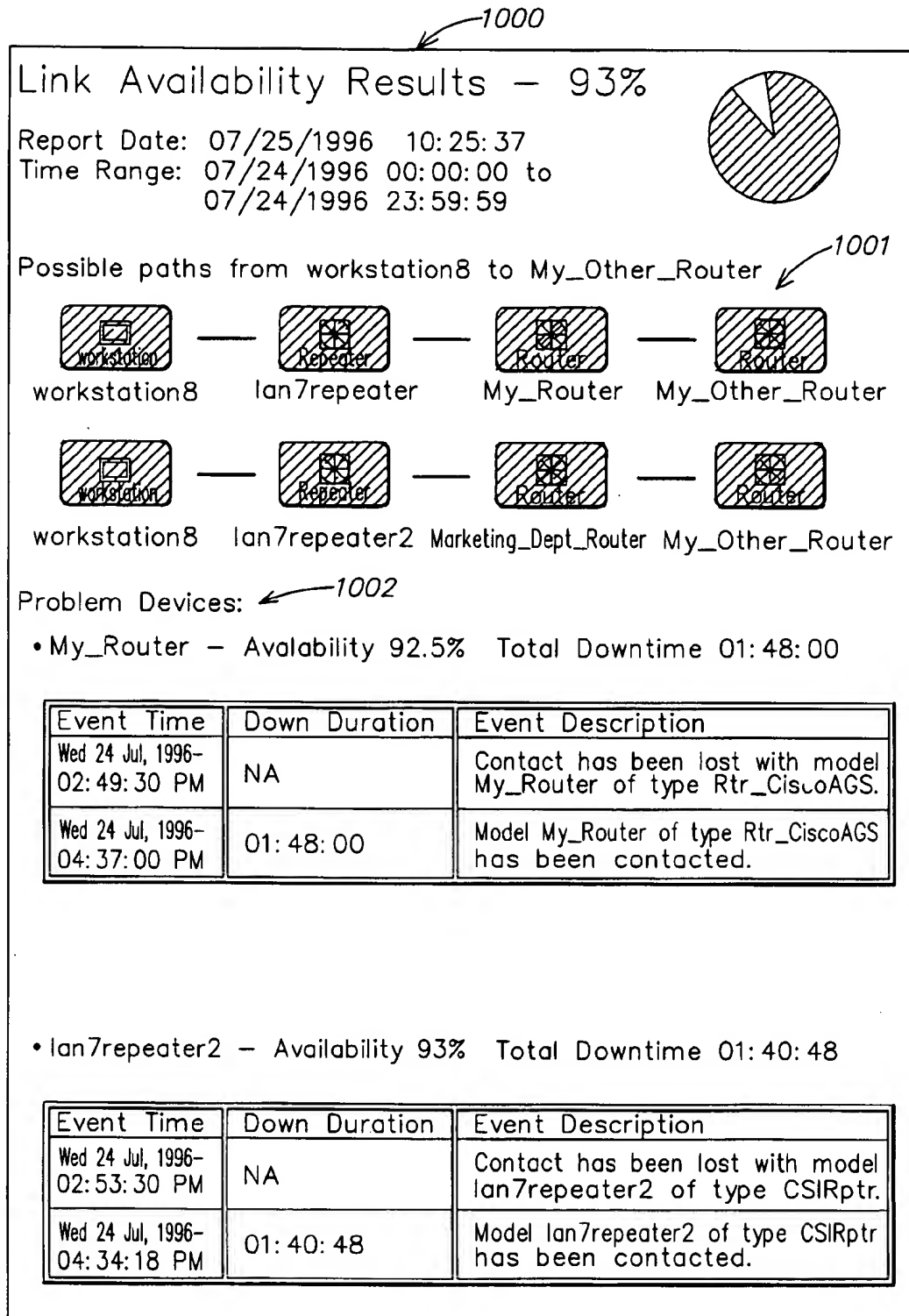
**FIG. 6**

800

Sub-Section	Source-Destination Pair	Network Availability	Rating	Link To More Details
Nashua Router	802		808	
804	Workstation1-NashuaRouter	98% 806	Excellent	⇒ 822
810	Workstation2-NashuaRouter	91% 812	Good 814	⇒ 824
816	Average	94.5% 818	Good 820	
Rochester Router				
	Workstation1-RochesterRouter	97%	Excellent	⇒
	Workstation2-RochesterRouter	93%	Good	⇒
	Average	95%	Excellent	
Merrimac Router				
	Workstation1-Merrimack-Router	94%	Good	⇒
	Average	94%	Good	
Abbott				
	User1-Abbott	75%	Poor	⇒
	User2-Abbott	79%	Poor	⇒
	Average	77%	Poor	
Shadowfax				
	User1-Shadow-fax	98%	Excellent	⇒
	User2-Shadow-fax	92%	Good	⇒
	Average	95%	Excellent	

**Fig. 8**

**FIG. 9**

**FIG. 10**

1

# SYSTEM FOR DETERMINING NETWORK CONNECTION AVAILABILITY BETWEEN SOURCE AND DESTINATION DEVICES FOR SPECIFIED TIME PERIOD

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention is directed to the management of computer networks, and more specifically to a method and system for determining availability of devices and paths within a computer network in order to determine and report on availability of the network.

### 2. Description of Related Art

Businesses and academic organizations throughout the world are now highly dependent on the operation of their computer networks and they make large investments of time and money in setting up and maintaining the same. MIS directors and system administrators work with and need to know and understand the workings of these networks, and in particular, need to be able to determine network "availability," i.e., if the network has been available to its users and if the network has been running efficiently. In doing so, it must be determined what measurements can be used to establish whether the network has been available. It is also necessary to keep track of the unavailability of the network to determine how much time has been lost because employees were prevented from doing their jobs. Finally, those components which impact network availability must be identified and their problems addressed.

In the past, network availability has been defined in different ways depending upon the focus of those persons doing the measuring and recording. For example, one purpose of availability measurement is to provide an early warning of a potential disaster, in which case network availability is defined as a ratio between MTBF (Mean Time Between Failures) and total time, where the total time equals MTBF plus MTTR (Mean Time To Repair).

In a communications network, device availability may be defined as a ratio between the time the device was available and a total time under evaluation. In this case, no consideration is given to the users and/or the functions of these devices where, for example, a wide-area link between two sites is inoperative and has no effect unless the users from one site are trying to access a facility on the other site. In other words, there may be instances where a device is inoperative, but has little or no impact on network operations because it is not being used or is lightly used.

It has been suggested that the availability of devices that are connected to each other can be aggregated, i.e., the aggregate is a product of all the availabilities of all devices in a particular path. This approach, however, has two flaws when applied to historic data. Firstly, when considering a single path between two devices, the resulting calculation will provide the most pessimistic number for the availability of the path and not the actual one. Using the most pessimistic number may mislead network managers about the actual functional availability of their networks. This inaccuracy results because the method does not account for any overlapping of down times of the devices under consideration. Secondly, the proposed approach fails to address a situation where there are multiple paths between devices in the communications network.

As a result, a system and method are necessary for providing a representation of network availability that is more comprehensive and realistic than known methods and

2

which accounts for overlap between device down times or path down times when aggregating the availabilities for a network link. Further, a system is needed which takes into account network topology and any changes thereto.

## SUMMARY OF INVENTION

According to the present invention, a method and system are provided which determine network availability by taking into account the network topology and the changes thereto. The present invention provides an accurate measurement of the availability of a destination device with respect to a source device by looking at all possible paths between the two devices. This, therefore, means that if a primary path and a redundant path are available between a source device and a destination device, any failure of the primary path will not impact network availability measurement if the network remains available via the redundant path. Further, the present invention accounts for an overlap of the unavailability of individual devices in a path so that unavailability is characterized more as a function of the path as opposed to the individual unavailabilities of the devices on the path. This last aspect, therefore, provides useful information about overall network availability, rather than the availability of isolated devices.

Specific paths between devices in the network are identified and used to characterize the network's availability. This information is then presented in the form of a report card. The report card can be customized to show specific network attributes and can be automatically generated on a scheduled basis.

These and other features and benefits of the present invention will be set forth in the following detailed description and drawings which are given by way of example only and are in no way restrictive.

## BRIEF DESCRIPTION OF FIGURES

FIG. 1 is a schematic representation of a network;

FIG. 2 is a schematic diagram of one embodiment of the present invention;

FIG. 3 is a schematic representation of a topology of a path in a network;

FIG. 4 is a flowchart of a first method according to a first embodiment of the present invention;

FIGS. 5a, 5b, 5c, 5d, 5e, 5f, 5g, and 5h, are timelines showing availability of devices in the topological path as found in FIG. 3;

FIG. 6 is a flowchart of a second method according to a second embodiment of the present invention;

FIG. 7 is a block diagram of functional layers of a system according to the present invention; and

FIGS. 8, 9, and 10 are sample network availability reports as generated according to the present invention.

## DETAILED DESCRIPTION

In order to measure the effectiveness of a computer network, the availability of each device on the network is generally determined. In the present invention, however, network availability is defined as the availability of useful devices and accessibility to useful devices from the perspective of users of these devices. A weighted measure of availability of a device is defined as a product of the device's availability and its relative importance with respect to other network devices where, for example, a more useful device, such as a router, being unavailable will have a greater impact

on network operations than a relatively scarcely used workstation. Further, point-to-point availability in a network between a source device and a destination device is an aggregate of the availabilities of all of the devices present on all possible paths between the source and the destination, taking into account non-operational overlap as described hereinafter.

The present invention focuses on useful devices and defines the availability of these useful devices in terms of point-to-point availability of the useful devices and their users. This method allows network managers to concentrate on real problems, rather than working with aggregations of the up times and down times (percentages) of all of the network devices whether or not they are "useful." As a result, "more important" devices, e.g., routers or servers, can be distinguished from "less important" devices, such as a workstation. The relative importance of the devices can be defined by several pre-selected or user-defined characteristics, e.g., volume of traffic (messages) through the device, or simply by a device characteristic, such as being a router or a server. The point-to-point availability measurement allows network managers to provide a more realistic view of the effect of unavailability of certain devices, in terms of the number of "affected users" who try to access the network through the unavailable device or devices.

As shown in FIG. 1, a network 100 may include a plurality of workstations 102 connected to one another via a local area network (LAN). Here, a first set 104 of workstations 102 are connected to a LAN 106, and a second set 108 of workstations 102 are connected to a second LAN 110. The LANs 106, 110 are each coupled to a repeater 112 which is connected to a hub 114. At what may be characterized as a highest level of the network 100, a router 116 is connected to the hub 114. As is well known, other combinations of hubs, repeaters, LANs and workstations may be connected to the router 116 and the hub 114 depending upon the size of a given network.

Many commercial network management applications are available. These include Spectrum® Network Manager, available from Cabletron Systems, Inc., Rochester, N.H., U.S.A. Operation of this network manager is described in U.S. Pat. No. 5,504,921 issued to Roger Dev et al., which is hereby incorporated by reference in its entirety.

The present invention uses the topology of the network for its determination of network availability and therefore runs in conjunction with a known tool for discovering the topology of a network. Many such tools are commercially available, such as those available from Cabletron Systems, Inc. and described in currently pending and commonly owned U.S. Pat. No. 5,727,157 issued on Mar. 10, 1999 by T. Orr et al., which is hereby incorporated by reference in its entirety.

In regard to topology determination, and as shown in FIG. 2, the network 100 is coupled to a discovery tool 200 which determines the topology of the network. The determined topology is delivered to a processor 202 which is coupled to a memory 204, storage device 206, an input device (keyboard) 208 and a display device 210. The discovery tool 200 will regularly poll the network 100 and from the results of this polling determine the topology of the network at a given point in time. This information is delivered to the processor 202 which organizes the information and stores it in the storage device 206 for later use. In addition, the information may be displayed concurrently on the display 210 and an operator may gather more information by submitting appropriate commands through the keyboard

208. The processor 202 can run on various hardware platforms including, but not limited to: a SunSparc 5, 10 or 20 processor running the SunOS or Solaris operating system; and an Intel x86 (or i960) processor running Windows 3.1, Windows '95, or Windows NT (or an embedded operating system in the case of the i960).

A user may wish to determine the historical availability of a network, between a source and a destination, over a previous time period. As an example, reference is made to FIG. 3, which shows a representation of all paths between a source (S) device 300 and a destination (D) device 302. As can be seen, there are two possible paths between the source 300 and the destination 302. One path includes device (A) 304 and device (B) 306, while a second path includes device (A) 304 and device (C) 308. The first path may be referred to as S-A-B-D, and the second path as S-A-C-D.

The point-to-point or link availability determines the historic link availability between the source 300 and the destination 302. As can be seen in the example of FIG. 3, multiple paths are available. The connection between the source 300 and the destination 302 is, therefore, considered available when any one of the possible paths is available at any moment in time during the time period of interest. According to the present invention, a determination of any overlap of unavailability between the devices and the paths is made. An advantage of the present invention is that the availability of the network is measured from the point of view of the user. Specifically, the source and destination devices are included in the calculation since these are devices which, from the perspective of a user, effect the network's availability. In other words, if a user attempts to access the network and his workstation is not functioning, then as far as that particular user is concerned the network is unavailable. The present invention polls the status of all devices, including the end stations, e.g., a user workstation, to determine when each device is operational and non-operational. One may see, however, that if a user is in the habit of shutting off a workstation at the end of the workday that this may artificially lower a network's availability result. The present invention includes the capability to measure network availability over a specific period of time, e.g., normal workday hours, so as not to be artificially impacted by such procedures as shutting off workstations when the workday is done.

A determination of the point-to-point availability of the network, between the source 300 and the destination 302, will now be described in conjunction with the flowchart shown in FIG. 4. In step 402, the source device and destination device are established, and in step 404 the time period under consideration ("sample time period") is determined. This can be chosen by a user through the keyboard 208 or automatically scheduled, as discussed further below. The network topology is analyzed and all possible routes, and the devices thereon, between the source and destination devices which existed during the sample time period are found in step 406. As per the example of FIG. 3, these would be the paths S-A-B-D and S-A-C-D. In step 408, one route is chosen for analysis. All devices on the chosen route are then identified in step 410. Subsequently, in step 412, one device on the route is chosen for analysis. In step 414, it is determined when the chosen device was operational and non-operational during the sample time period. All devices in the route must be examined and, at step 416, if it is determined that there are remaining devices in the path to be analyzed, control passes to step 418 which chooses the next device, and then again (at step 414) the operational/non-operational condition of that next chosen device is determined.



When all devices in the chosen route have been examined, control passes to step 420 where all "operational time periods," during the sample time period, are identified as occurring when all devices in the route were concurrently operational. In step 422, the route's availability is determined as being those operational time periods. At step 424, it is determined whether or not there are remaining routes to be analyzed, and if so, control passes to step 426 which chooses a next route and then control returns to step 410. When all alternative routes and all devices on those routes have been analyzed, at step 424 control passes to step 428 where it is determined when at least one route of the available routes was operational during the sample time period (i.e., overall connection availability).

As can be seen, when there are two paths between a given source and destination and one path is unavailable, but the other path is available, the present invention will determine that a point-to-point connection is still available. In other words, the operational availability of the network is better reflected by the present invention because, in reality, the source and destination are still in contact with one another and, as far as the user is concerned, the network is available. This present method, therefore, provides a more realistic representation of the operation of the network as seen by the user.

A timeline, as shown in FIGS. 5a, 5b, 5c, 5d, 5e, 5f, 5g and 5h, provides a visual representation of the determination of device availability, path availability and overall connection availability. In each of FIGS. 5a, 5b, 5c, 5d, 5e, 5f, 5g and 5h, the time period under consideration runs from time  $t_0$  to time  $t_{end}$ . Further, the X-axis represents time while the Y-axis represents the operational or "up" condition (U) and the non-operational or "down" condition (D) of the device or path.

As shown in FIG. 5a, for example, the source S 300 is up from time  $t_0$  to time  $t_9$ , down from time  $t_9$  to time  $t_{11}$  and up from time  $t_{11}$  to time  $t_{end}$ , i.e., the end of the sample time period under review.

As shown in FIG. 5b, device A 304 is up from  $t_0$  to  $t_3$ , down from time  $t_3$  to  $t_6$ , up from time  $t_6$  to  $t_9$ , down from time  $t_9$  to time  $t_{10}$  and up from time  $t_{10}$  to time  $t_{end}$ . FIGS. 5c, 5d and 5e represent the up/down conditions of device B 306, device C 308 and the destination device D 302, respectively, over the same sample time period.

The availability of the path S-A-B-D is shown in FIG. 5f as those time periods when device S 300, device A 304, device B 306 and device D 302 are concurrently operational. As shown, these devices are concurrently operational during the time period from time  $t_2$  to time  $t_3$ , from time  $t_8$  to time  $t_9$ , and from time  $t_{10}$  to time  $t_{end}$ . Similarly, as shown in FIG. 5g, availability of path S-A-C-D is as shown. The availability of path S-A-C-D is determined as being those time periods when device A 304, device C 308 and destination D 302 are concurrently operational.

The point-to-point availability of the link between the source 300 and the destination 302 is the time when at least one of the alternative paths S-A-B-D and S-A-C-D are available. This overall availability is shown in FIG. 5h, indicating that the network was available between the source 300 and the destination 302 from time  $t_0$  to time  $t_1$ , time  $t_2$  to time  $t_3$ , and time  $t_{10}$  to time  $t_{end}$ . The point-to-point network availability of the connection can then be calculated as a ratio of this overall availability (i.e., the total time the connection between the source 300 and the destination 302 was available), divided by the length of the sample time period. Accordingly, for the example shown in FIGS. 3 and 5, the ratio would be:

$$((t_1 - t_0) + (t_3 - t_2) + (t_{end} - t_{10})) / (t_{end} - t_0) \quad (1)$$

The resulting number would, therefore, be a measurement of the functional availability of the connection between the source 300 and the destination 302 which more closely relates to what the users at the source 300 and the destination 302 experienced. This measurement could then be used to characterize the network's overall availability.

It should be noted that there may be periods of time when the status of a particular device in a path is unknown. In other words, the monitoring system might not have been able to determine the status of the particular device. In that event, the period or periods of time during which one or more device states could not be determined would be taken out of the availability calculation. As an example, as shown in FIG. 5a, the status of the source S is unknown from time  $t_{12}$  to time  $t_{13}$ , as represented by the cross-hatching. This would then affect the availability determination of path S-A-B-D as shown in FIG. 5f and, therefore, affect the overall availability as shown in FIG. 5h. The point-to-point network availability of the connection under these circumstances would then be:

$$((t_1 - t_0) + (t_3 - t_2) + (t_{end} - t_{10}) + (t_{12} - t_{10}) + (t_{end} - t_{13})) / ((t_{end} - t_0) - (t_{13} - t_{12})) \quad (2)$$

The resulting number would, therefore, now be a measurement of the functional availability between the source 300 and the destination 302 during those time periods when the up or down status of the devices could be determined. In order to characterize this ratio where the operating condition of at least one device was unknown, it would be indicated that for some period of time of the overall time period, availability could not be determined. This portion of the overall period would be equal to:

$$(t_{13} - t_{12}) / (t_{end} - t_0) \quad (3)$$

As one of ordinary skill in the art can easily determine, the method of the present invention works for any number of paths between a source and destination where each path has any number of devices along it. Further, point-to-point availability can be monitored on an on-going or polled basis so that a cumulative or running measurement can be maintained. In this manner, a baseline measurement can be obtained. In addition, those time periods when the network is down for scheduled maintenance can be removed from consideration so as not to artificially lower the network availability measurement result.

In a second embodiment of the present invention, network availability is calculated using weighted measures. Each node or device in the topology is given a weighted value such that the relative importance of a node with regard to other nodes in the network can be determined. The weight can be determined using different measures, e.g., how many nodes are connected to the node under consideration, traffic at the node, or classification of the node by function or cost of using the node. Cost may be viewed as a negative weight, where use of a more expensive resource has a negative impact on network operation. These measures can therefore be any parameter that determines the importance of the node to the user. For a given section of the network, the weighted availabilities of each individual device in that given section can be aggregated.

For example, for a given device  $i$ , its relative weight (RW <sub>$i$</sub> ) is equal to the weight, assigned to the device  $i$  divided by the total of all of the weights of all of the devices in the section of the network being evaluated. This is set forth in Equation 4:

$$RelativeWeight_i = \frac{Weight_i}{\sum_{i=1}^N Weight_i} \quad (4)$$

$N$  = Number of devices

The device availability ratio is equal to the amount of time the device was available divided by the length of the time period under consideration as per Equation 5:

$$Availability_i = \frac{\text{time device } i \text{ was operational}}{\text{length of time period under consideration}} \quad (5)$$

The aggregate network availability of that section is then equal to the sum as shown in Equation 6:

$$\text{Aggregate Network Availability} = \sum_{i=1}^N RelativeWeight_i * Availability_i \quad (6)$$

The second method embodiment is described in the flowchart of FIG. 6. At step 600, all devices in a section of interest (sample section) of the network are identified. Further, in step 602, the time period under consideration (sample time period) is determined. A relative weight (RW) is assigned to each device in step 604 (see Equation 4). In step 606, one device in the sample section is chosen and in step 608 it is determined when the chosen device was operational and non-operational during the sample time period. In step 610, the weighted availability of the device is calculated. If all devices have not been examined, as per step 612, control passes to step 614 where the next device is chosen and control then passes to step 608. When all devices have been examined as determined at step 612, the aggregate network availability of the section as the sum of all weighted availabilities is calculated in step 616 (see Equation 6).

Of course it can be seen that if the availability of a particular device cannot be determined, i.e., is unknown, those periods of time would be withdrawn from the calculation. As above, a percentage of the time period under consideration for which availability of a device or devices was unknown would be reported.

Availability reports, generated from the data gathered from both embodiments of the present invention, would be useful to many individuals in order to assess the availability of the network. For example, as shown in FIG. 7, a network availability report system may consist of a three-layer architecture including a user interface layer 702, a network availability task or business layer 704, and a data layer 706. The data layer 706 may be implemented using Distributed Data Manager, (DDM) as available from Cabletron Systems, Inc. The user interface layer 702 can be viewed using a web browser. The data files can reside on a web server on an intranet of a facility implementing the present invention. The network availability task, in business layer 704, requests data from the data layer 706. The network availability task 704 arranges the data and generates reports to be displayed on the intranet (user interface layer 702).

By way of example, the network availability task 704 may generate three types of reports. A first type is a device availability report for devices designated by a user. A second type displays point-to-point availability between any two designated devices. A third type allows a user to determine the availability of a network in terms of availability of select paths. All types of reports may be scheduled ahead of time to run automatically or could be run by a user on demand.

The network availability task 704 may have at least two ways to obtain network topology information. First, the DDM can store the network topology and can update its topology information as a background process during off hours or at other times as directed by a user. In this manner, when a user runs a network availability report, the topology information is already in the database in a preprocessed format. The network availability task 704 will then correlate the event information with the topology information to determine the network availability.

A second option is to directly infer the topology information from what is available in a database, such as the Spectrum® Network Management System available from Cabletron Systems, Inc. A Path View application (available from Cabletron Systems, Inc.) uses this information to show a path from the source device to the destination device.

A report generated by the present invention may display the uptime and downtime for a device, selected by a user, for a given time period. The information can be displayed in a step graph format similar to that which is shown in FIGS. 5a, 5b, 5c, 5d, 5e, 5f, 5g and 5h. Further, implementing reports and analysis using SNMP protocols and taking advantage of hypertext links, HTTP, and documents in the HTML format, a user may gather and display further event information.

In addition, a report may also display historic path availability between two devices. A user may input a source and destination for a path of interest and a time period of interest, in order to generate the report. The network availability task 704 will then determine all possible paths through the network and display them.

A user can customize a report card for the network. In order to determine how a network functions during a certain time period, the user can designate key source and destination pairs as representatives for the operation of the network. The network availability task then determines the link availability for all of those pairs of devices, and creates a report card for the health of the network which can be expressed in terms of, for example, poor, good or excellent. These grades are configurable by the user where, e.g., "excellent" equals availability greater than 95%, "good" availability equals 80%–95%, and "poor" equals availability below 80%. Of course, different ranges may be chosen and these are merely set forth as examples. The report card may display availability for each pair, along with an average availability (across the pairs) and a standard deviation. Of course, one can see that such reports can be scheduled to run at predetermined times and can include other relevant data regarding network operations.

An example report card is shown in FIG. 8. As can be seen, for a particular network sub-section designated as "Nashua Router" 802, two source-destination pairs (in column 2) have been designated to represent the availability of this sub-section. For the first source-destination pair 804, represented by Workstation1-NashuaRouter, entry 806 indicates that the network availability is 98%, resulting in a rating 808 of "excellent." The second source-destination pair 810, represented by Workstation2-NashuaRouter has a network availability 812 of 91%, and a rating 814 of "good." The average 816 of these two source-destination pairs is an average network availability 818 of 94.5%, which results in a rating 820 of "good." The report card 800 is in an HTML document, which enables a user to link to further information regarding either source-destination pair 804 and 810, by clicking on hypertext link, 822 and 824, respectively. These hypertext links provide added value in that the user is told why the link between the source and the destination was not available, and not just the fact that it was down. As above,

a step-graph timeline (e.g., FIGS. 5a, 5b, 5c, 5d, 5e, 5f, 5g and 5h) can be provided to show the availability of the path, i.e., when during the sample time period the source-destination pair was available or unavailable. Any other graphic representation of the information could also be used.

With the report card 800 available in a web-browser format, a network manager need not be directly linked to the network via a network manager's console (which requires specific hardware connecting it to the network). Further, access to the report card can be granted to anyone with a web browser and, of course, access to the report card can be limited via the use of either passwords or account numbers so that potentially sensitive business information regarding the information and topology of the network can be protected. In this manner, network availability could be accessed through either the company's intranet or even the Internet with appropriate security precautions taken. Creating, maintaining and structuring a web browser to present the network availability report card is well within the capabilities of one of ordinary skill in the art.

As shown in FIG. 9, a report card 900 for Network Alpha provides an average network availability calculation 901 on a particular report date for a particular time range. In addition, the five least available links 903 are displayed in ascending order. If a user desired additional information she could click on the "details" hypertext link 902 and be provided with additional information. In another section 904 of the report card, the availabilities of particular links within the network are set forth. In this example, thirteen links between different source/destination pairs are used to indicate the overall network availability. The average of these link availabilities results in the average network availability displayed at the top of the report card.

When a user chooses the details hypertext link 902, additional information 1000 can be provided (see FIG. 10). This additional information may include a graphic representation 1001 of the possible paths between, for example, workstations and My\_Other\_Router, as shown in FIG. 10. Those devices which have low or unacceptable availability may also be identified (Problem Devices 1002). In the example shown in FIG. 10, the devices My\_Router\_and land7repeater 2 are singled out for unusually low availability ratings. Events which contributed to this low availability are also presented.

The weighted measures technique, according to the second embodiment of the present invention, can be applied to a calculation of the point-to-point availability as per the first embodiment. For example, when there is a primary path and a backup path between two devices, there may be a premium (extra cost) associated with use of the backup path. Specifically, use of the backup path might induce charges which have to be paid out of an annual budget in real dollars. The impact of the use of the backup path can either be shown (to the network manager) in a report card as a cost (in dollars), or as a factor which reduces the network availability rating. Alternatively, there may be an additional rating measurement for fiscal efficiency or the like.

While an embodiment has been shown where the report is available on a private intranet or the public Internet using a browser and HTML compatible data structures it is clear that the present invention could be implemented in other ways. For example, the availability can be determined according to the present invention and presented as a report without HTML links or browsing capabilities, i.e., merely a non-interactive report. This approach is meant to be within the scope of the present invention.

Having thus described various illustrative embodiments of the present invention, various other modifications will

occur to those skilled in the art that are intended to be within the scope of the present invention. Thus, this description and accompanying drawings are provided by way of example only and are not intended to be limiting.

We claim:

1. A method of determining availability, for a specified time period, of a connection within a computer network between a source device and a destination device in the computer network, the method comprising steps of:

determining all routes between the source and destination devices which existed within the computer network during the specified time period; and

for each respective determined route:

determining all devices which were on the respective route during the specified time period;

for each determined device on the respective route, determining an operational time period during which the respective device was operational and a non-operational time period during which the respective device was not operational during the specified time period;

determining the respective route to have been operational during any period of time when all devices on the respective route were concurrently operational; and

determining the availability of the connection as a function of all time periods when at least one route between the source and destination devices was operational during the specified time period.

2. The method as recited in claim 1, including:

determining when no route between the source and destination devices was operational during the specified time period.

3. The method as recited in claim 1, wherein for each respective determined route the method includes:

adding together all periods of operational time during which at least one route between the source and destination devices was operational during the specified time period to determine a cumulative available time duration; and

determining a ratio of the determined cumulative available time duration to a duration of the specified time period.

4. The method as recited in claim 1, including displaying the determined availability of the connection.

5. A method of determining availability, for a specified time period, of a connection within a computer network between a first device and a second device in the computer network, the method comprising steps of:

(a) determining all routes between the first device and the second device that existed during the specified time period;

(b) determining all time periods when each respective route was operational during the specified time period; and

(c) determining the availability of the connection in the computer network between the first and second devices for the specified time period as a function of all determined time periods when at least one determined route was operational.

6. The method as recited in claim 5, wherein step (b) includes:

(b1) determining each device on the respective route; and

(b2) determining an operational time period during which a respective determined device on the respective route

## 11

was operational and a non-operational time period during which the respective determined device was not operational during the specified time period.

7. The method as recited in claim 6, wherein step (b1) includes defining the first device and the second device as devices on the respective routes.

8. The method as recited in claim 6, wherein step (b) further includes:

determining the respective route to be operational during any time period within the specified time period during which all determined devices in the respective route were concurrently operational.

9. The method as recited in claim 8, wherein step (c) includes:

determining the availability of the connection to be a ratio of a total time during which at least one route was operational during the specified time period to a duration of the specified time period.

10. The method as recited in claim 9, wherein step (c) further comprises:

adjusting the ratio to exclude those time periods during which the operability of at least one device was unknown.

11. A method for determining availability, over a specified time period, of a predetermined section of a computer network, the predetermined section including a plurality of devices in the computer network, the method comprising steps of:

(a) determining a relative weight value for each device of the plurality of devices;

(b) for each device of the plurality of devices, determining an amount of operational time the respective device was operational during the specified time period;

(c) for each device of the plurality of devices, determining a weighted availability value equal to the respective relative weight value multiplied by the respective operational time and divided by the specified time period; and

(d) determining the availability of the predetermined section of the computer network to be a sum of the determined weighted availability values of the plurality of devices in the predetermined section of the computer network.

12. The method as recited in claim 11, wherein step (a) comprises steps of:

(a1) assigning an absolute weight value to each device of the plurality of devices; and

(a2) determining the relative weight value for a respective device to be equal to the absolute weight value of the device divided by a sum of the absolute weight values of the plurality of devices.

13. The method as recited in claim 12, wherein step (a1) comprises steps of:

measuring a number of messages which passed through the respective device during the specified time period; and

## 12

determining the absolute weight value as a function of the number of messages which passed through the respective device during the specified time period.

14. The method as recited in claim 12, wherein step (a1) comprises steps of:

measuring a cost per unit time of operating a respective device during the specified time period; and

determining the absolute weight value as a function of the cost per unit time of operating the device during the specified time period.

15. The method as recited in claim 14, wherein step (a1) further comprises steps of:

measuring an amount of time the respective device was utilized during the specified time period; and

determining the absolute weight value as a function of the amount of time the respective device was utilized during the specified time period.

16. The method as recited in claim 12, wherein step (a1) comprises steps of:

measuring a number of other devices to which a respective device was connected during the specified time period; and

determining the absolute weight value as a function of the number of other devices to which the respective device was connected during the specified time period.

17. An apparatus to determine availability, for a specified time period, of a connection within a computer network between a first device and a second device, the apparatus comprising:

a discovery tool coupled to the computer network to discover a topology of the computer network; and

a processor coupled to the discovery tool to receive the discovered topology of the computer network and to determine all routes between the first and second devices in the computer network and to determine all time periods during which each route was operational during the specified time period;

wherein the processor determines the availability of the connection as a function of all determined time periods during which at least one route of all determined routes was operational during the specified time period.

18. The apparatus as recited in claim 17, further comprising:

means for displaying the determined availability of the connection.

19. The apparatus as recited in claim 17, further comprising:

means for identifying all routes in the network between the first device and the second device;

means for identifying all devices on each identified route; and

means for determining an operational time period during which a respective identified device on each identified route was operational.

\* \* \* \* \*